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FIG. 1

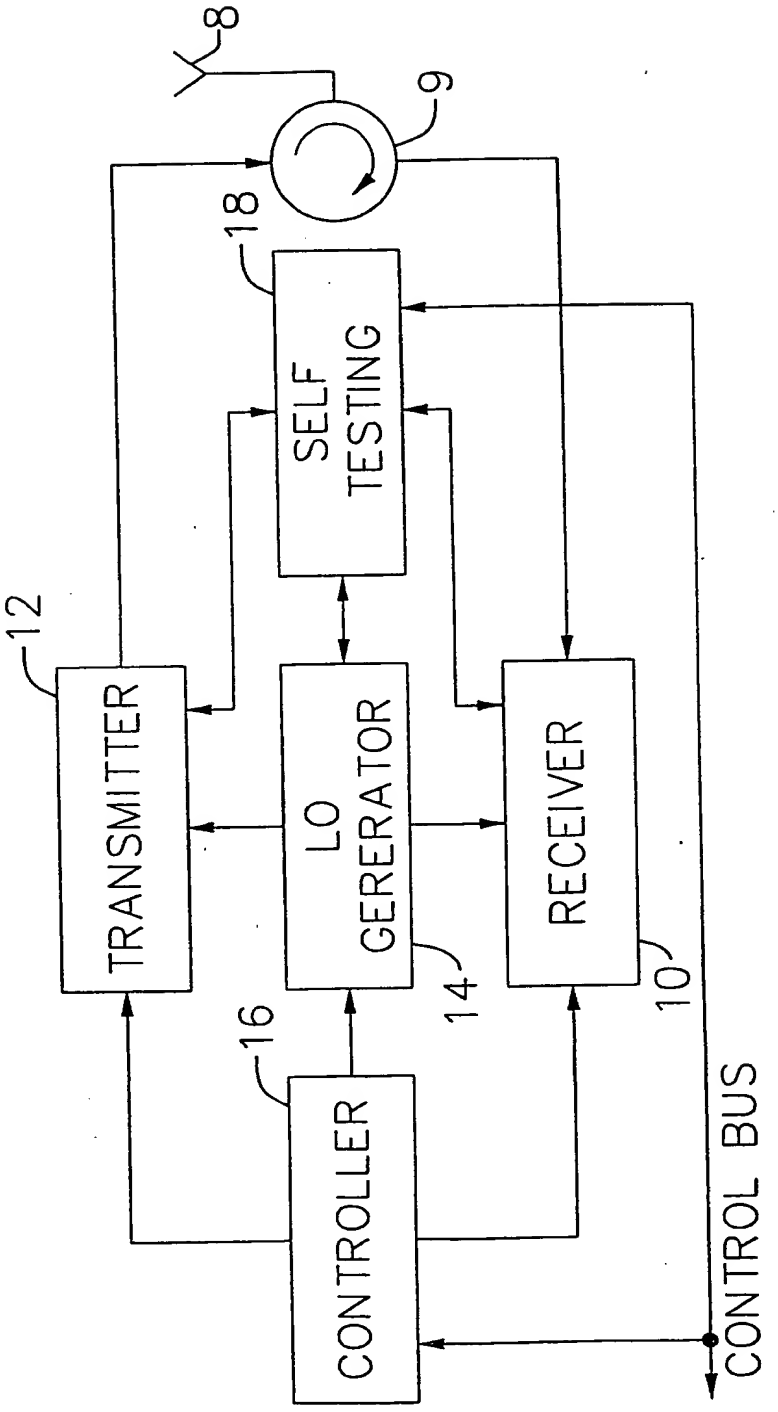

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FIG.2

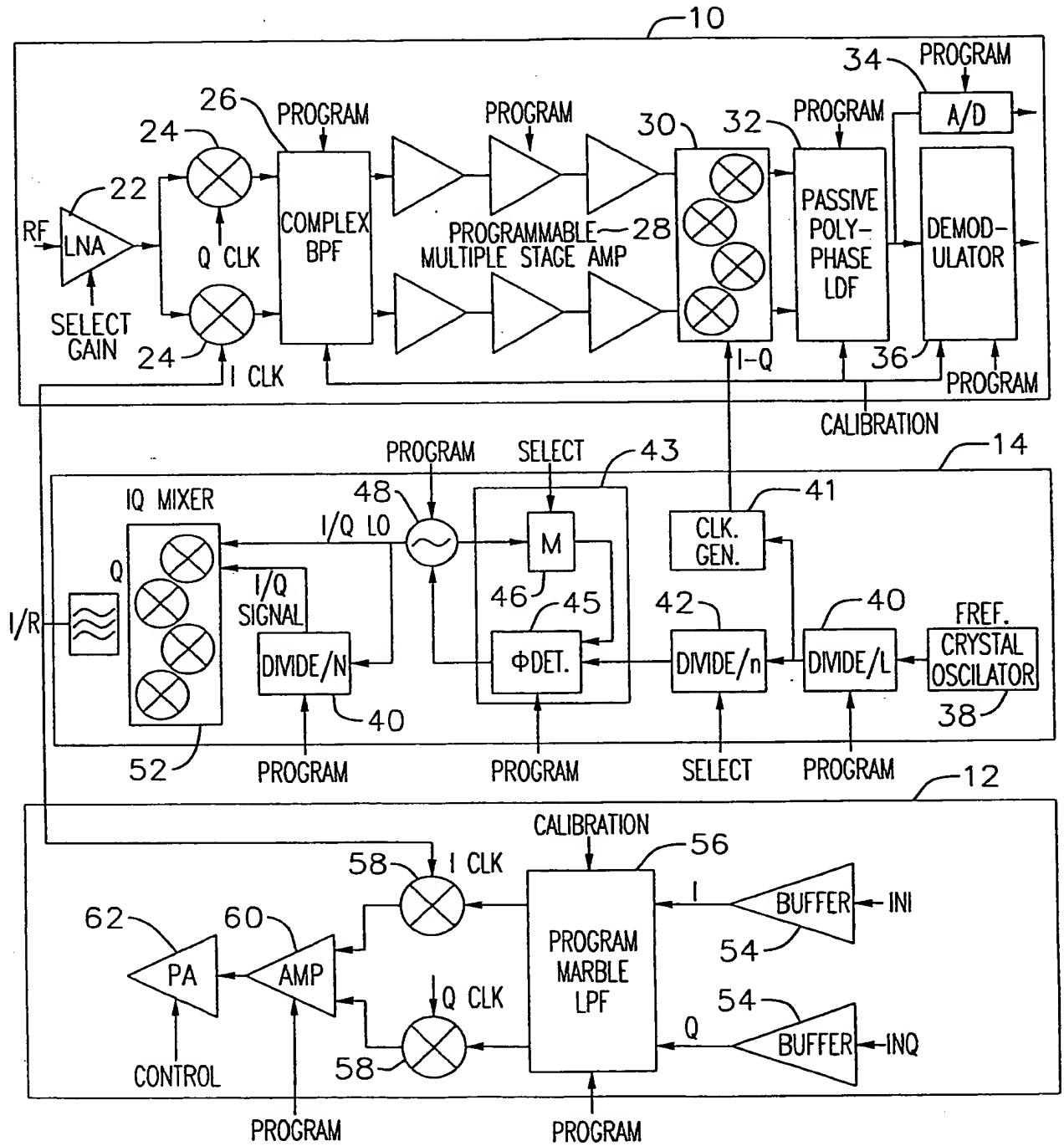

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FIG. 3

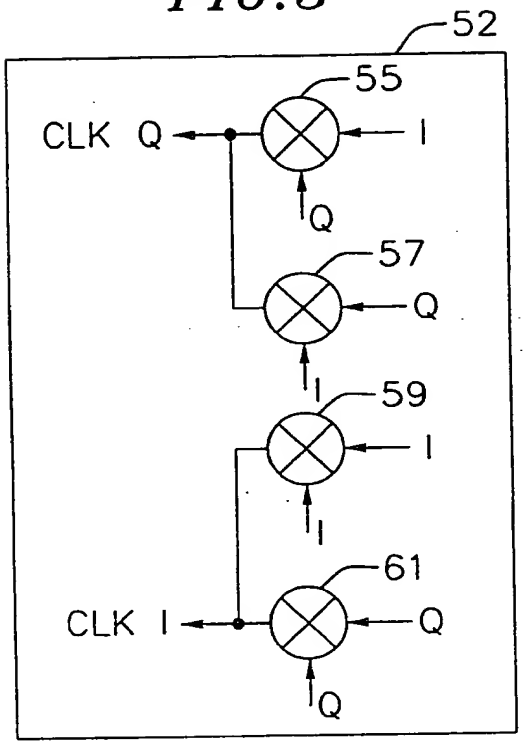

FIG. 4

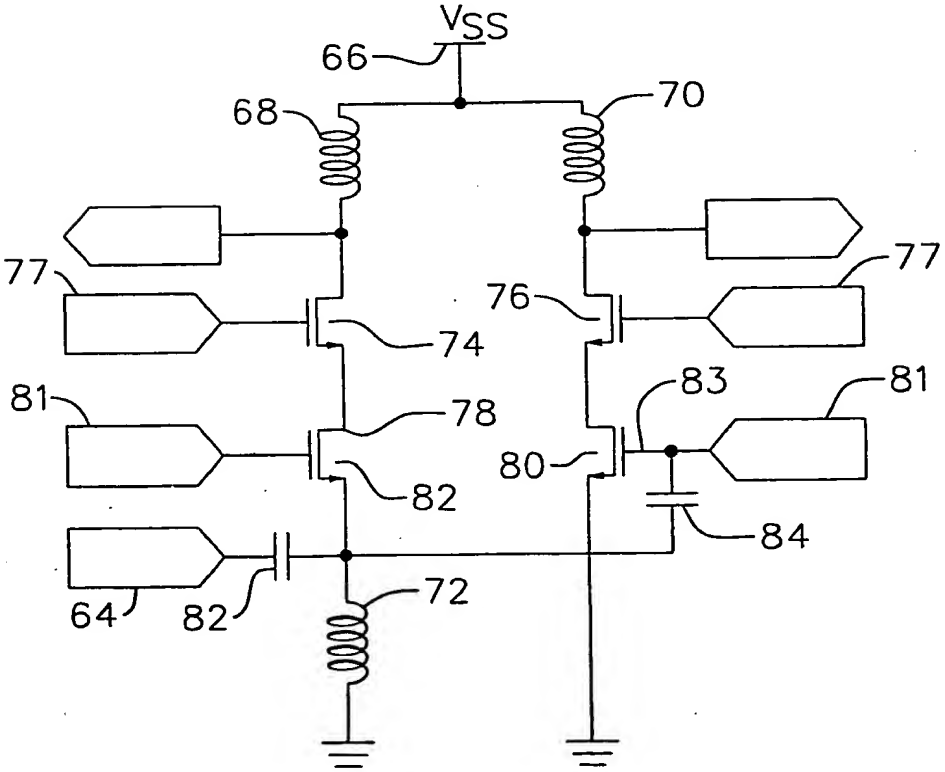

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FIG. 4(a)

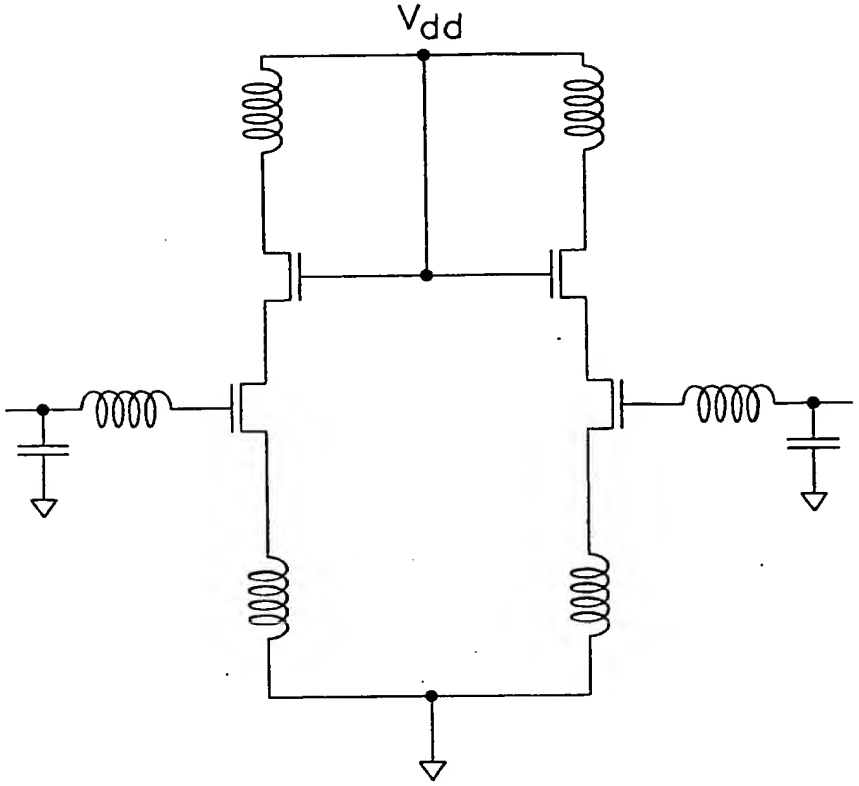

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FIG.5

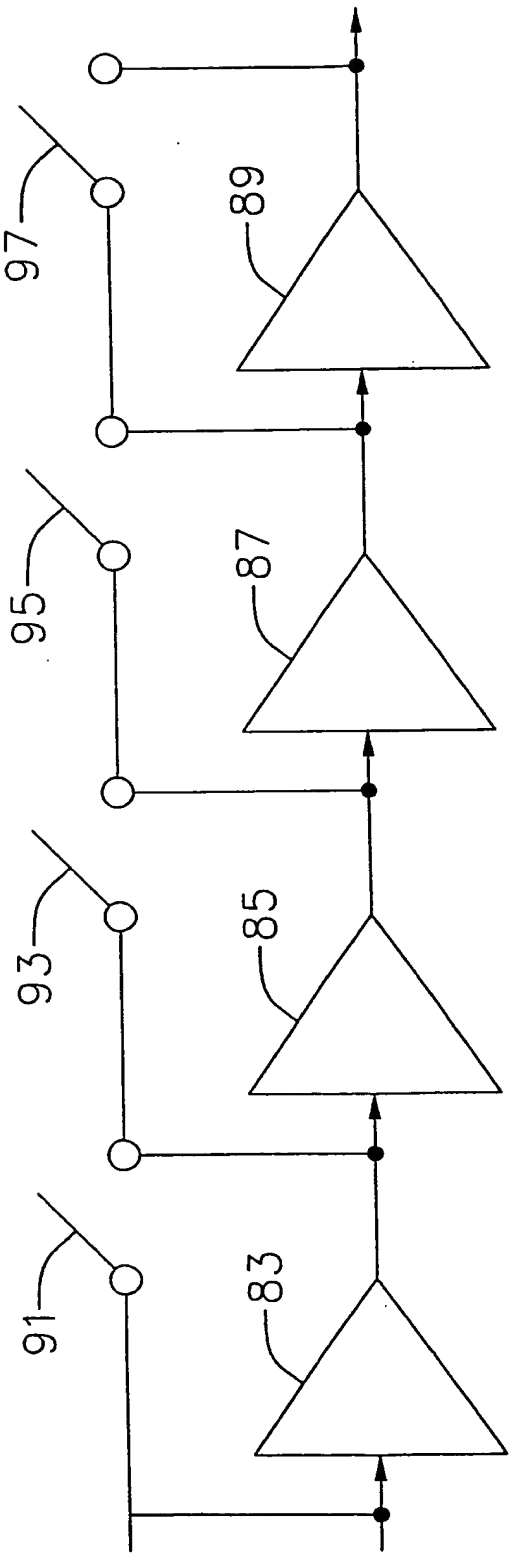

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FIG. 6

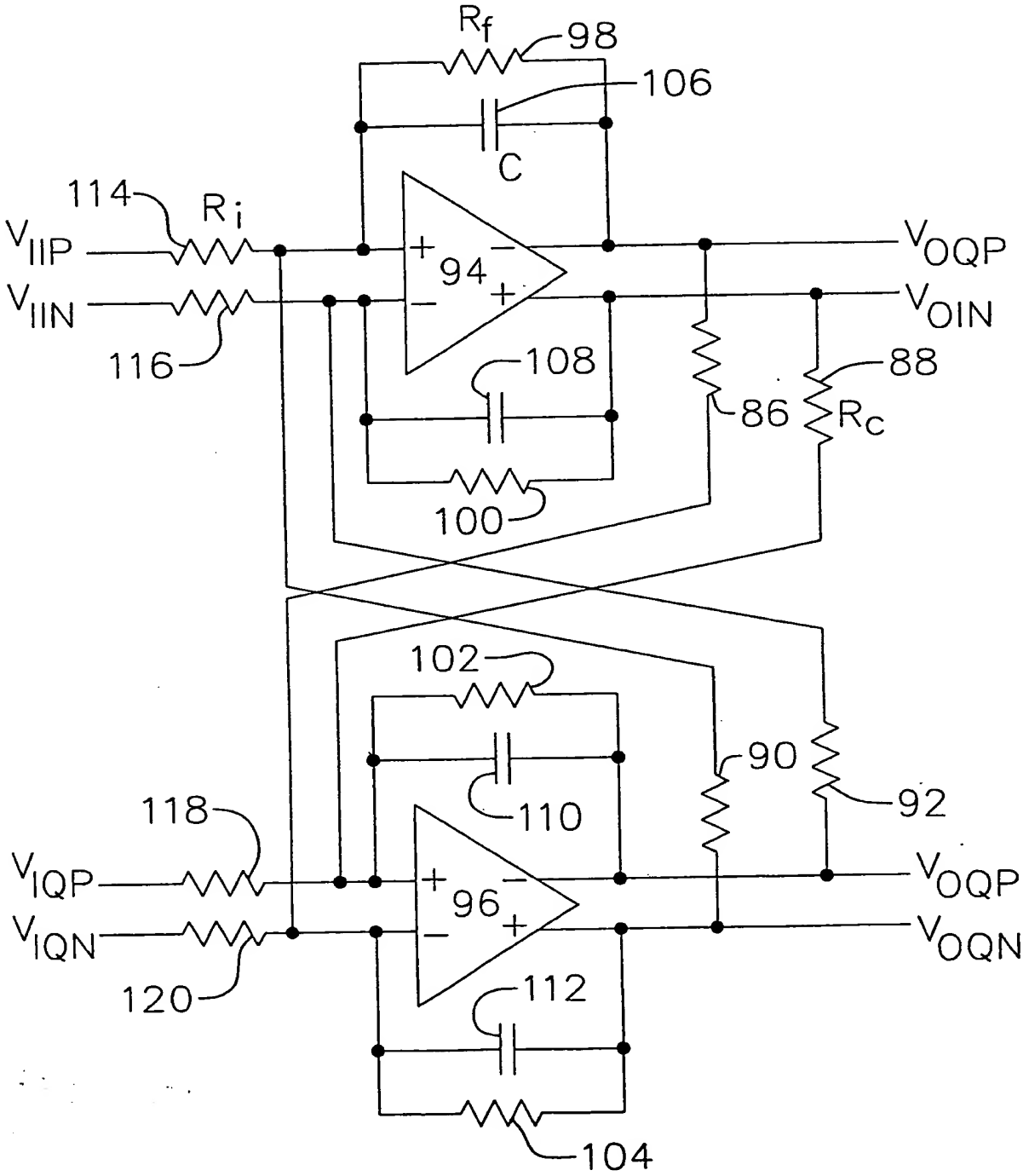

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FIG. 7

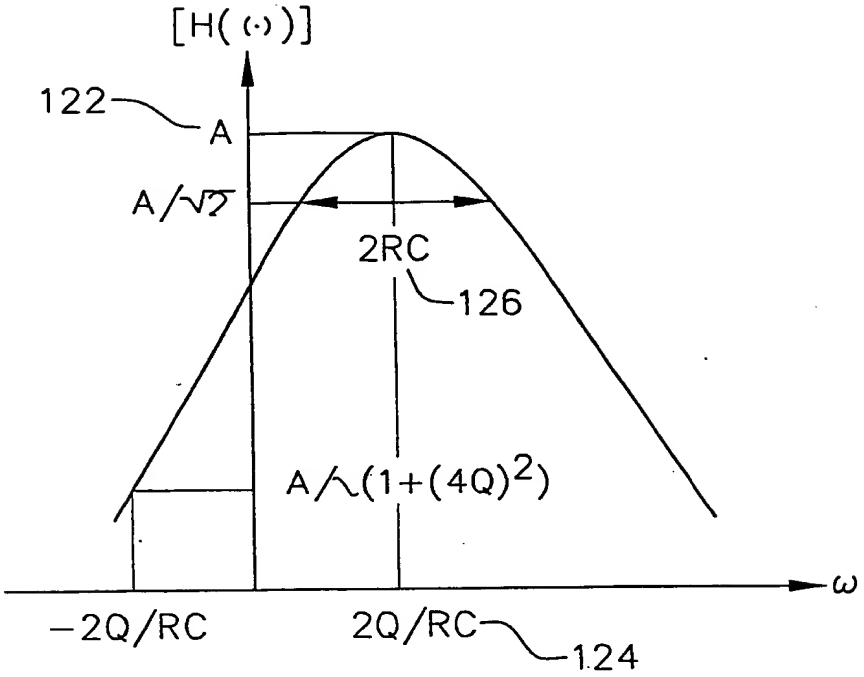

FIG. 8

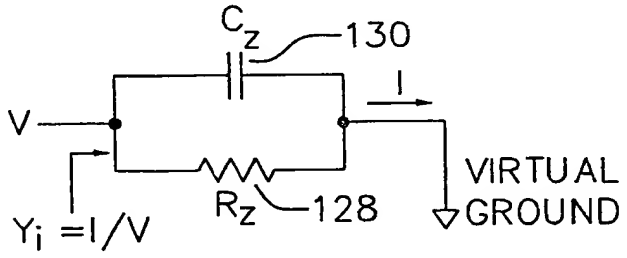

FIG. 9

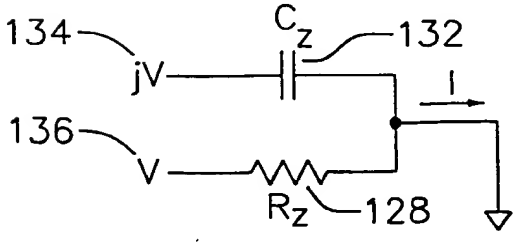

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FIG. 10

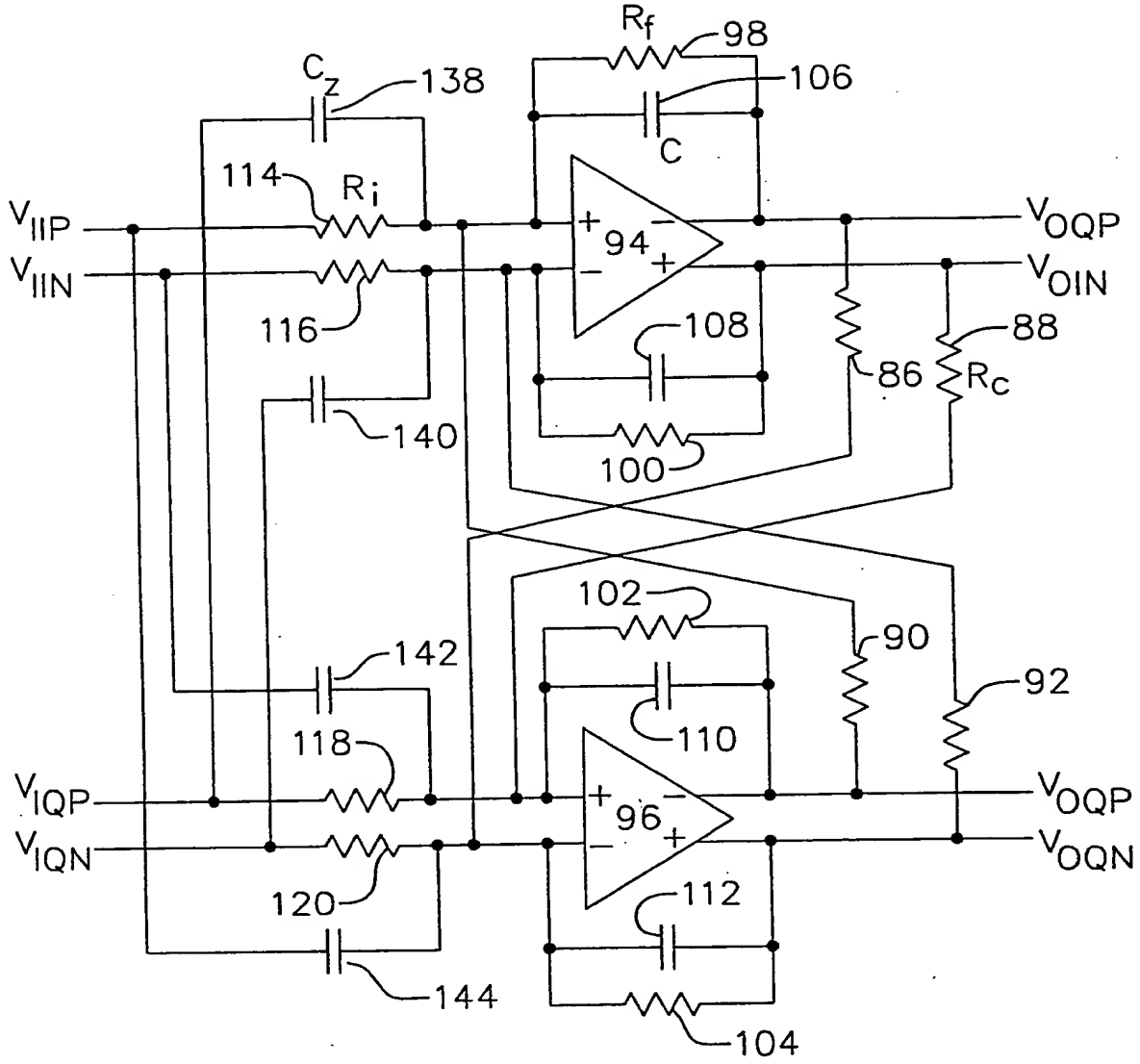

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FIG. 11

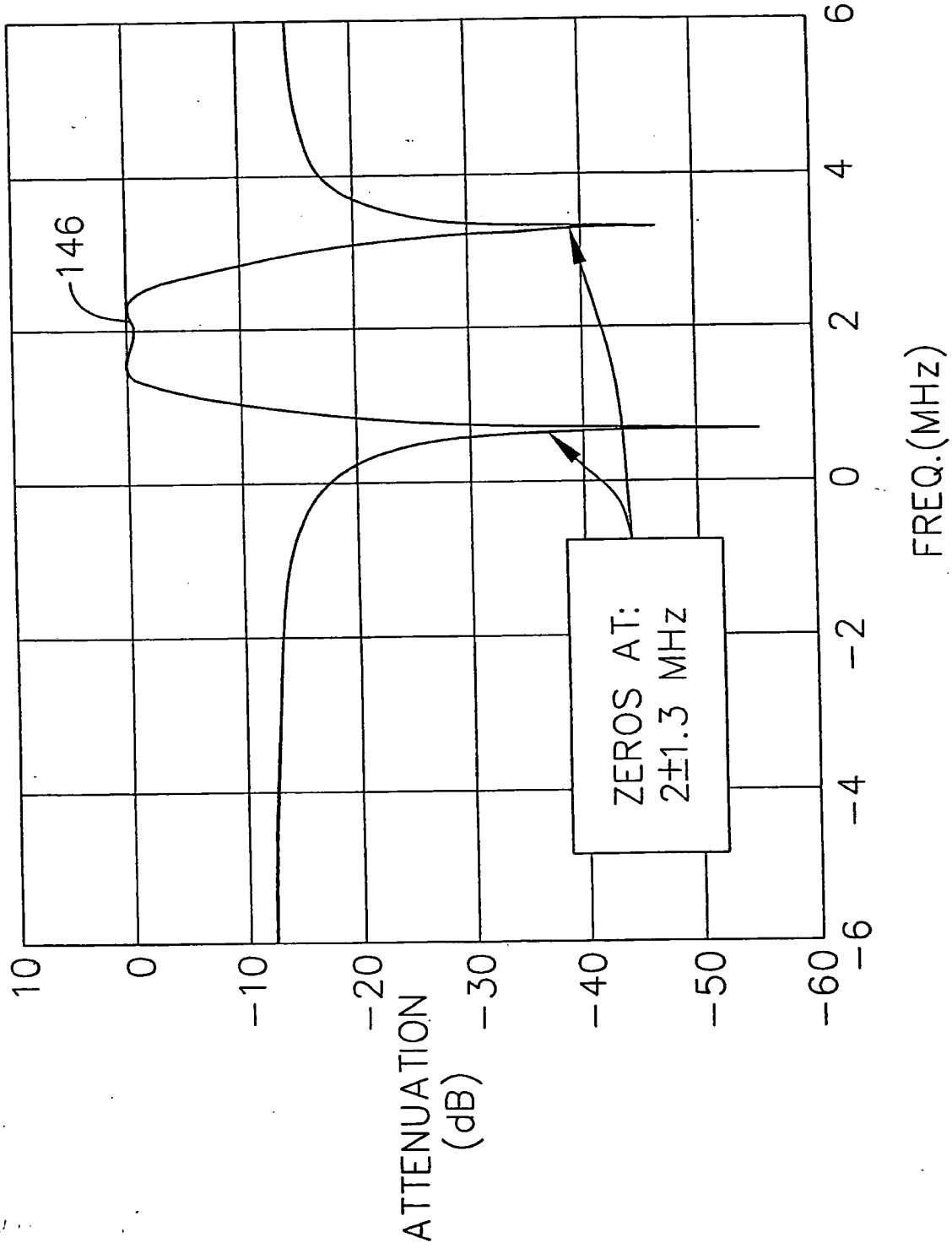

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FIG. 12a

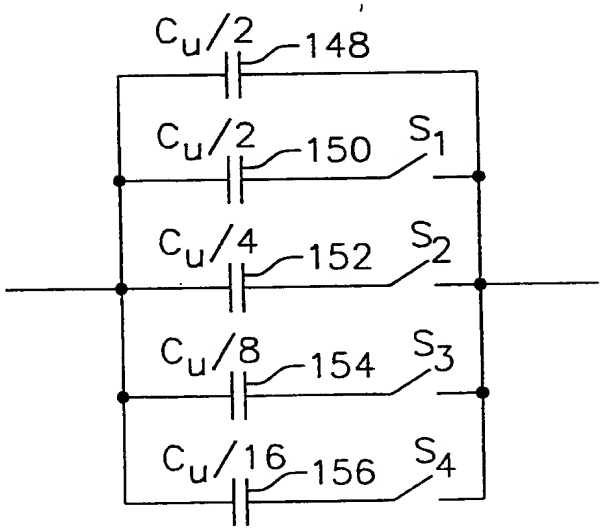

FIG. 12b

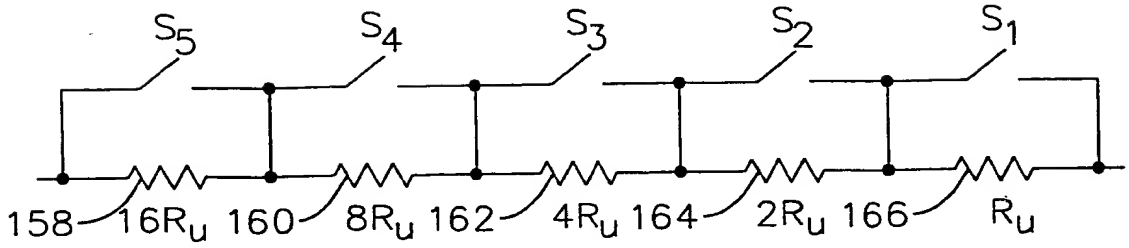

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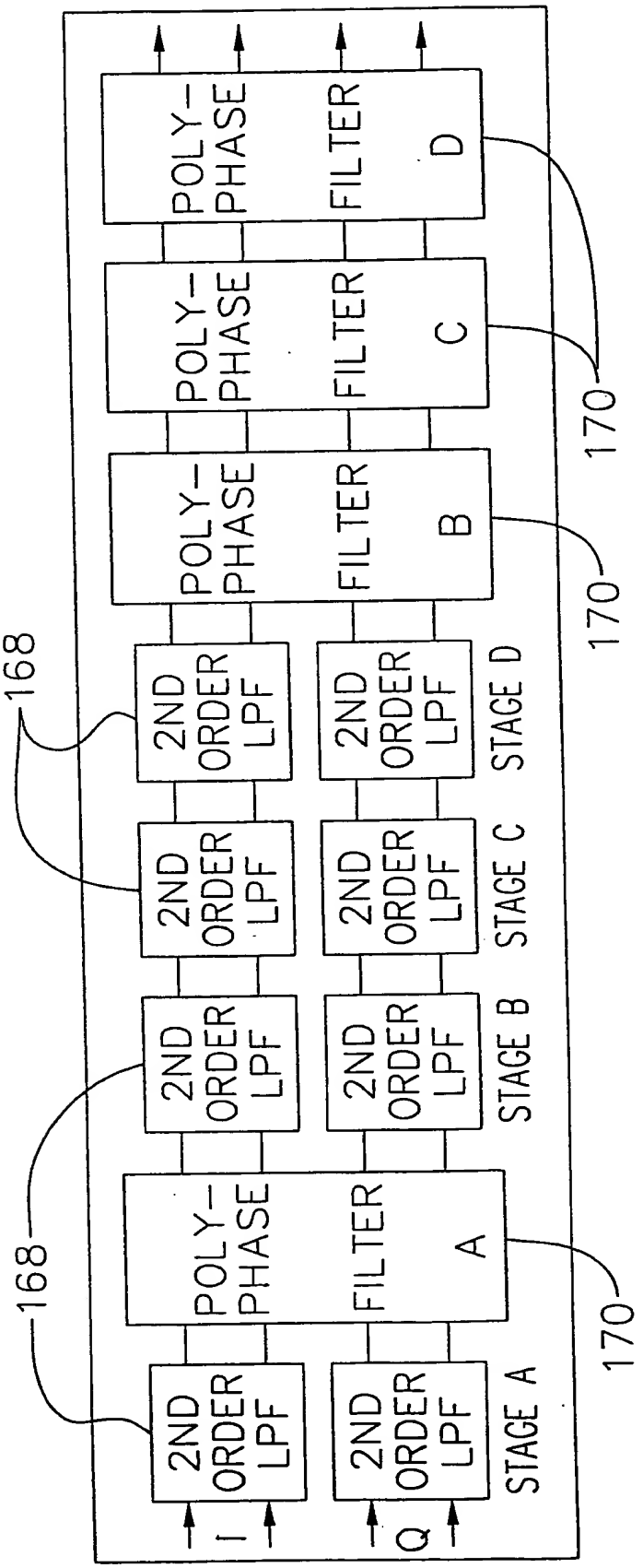
FIG. 13



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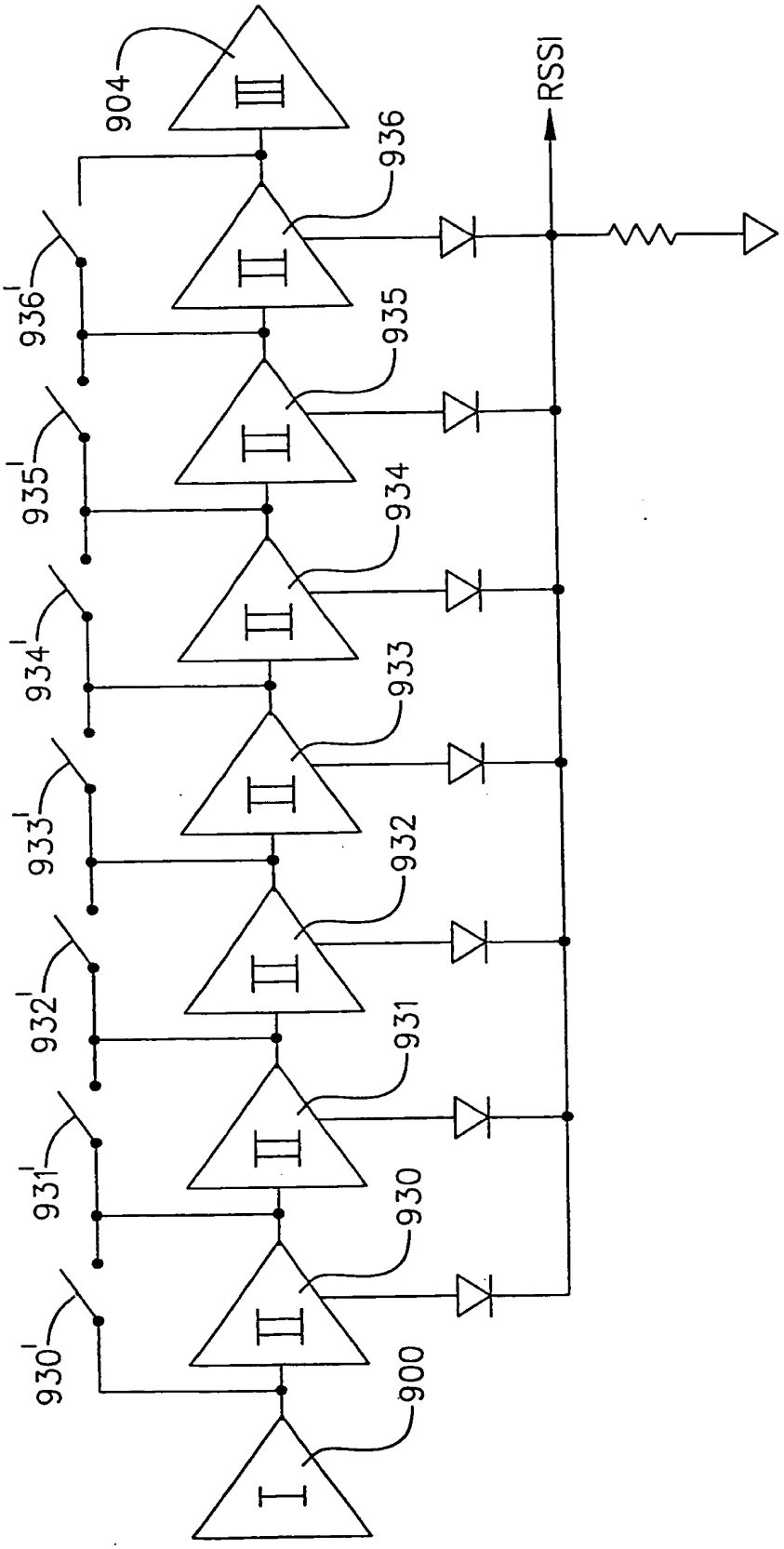

FIG. 14

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FIG. 15

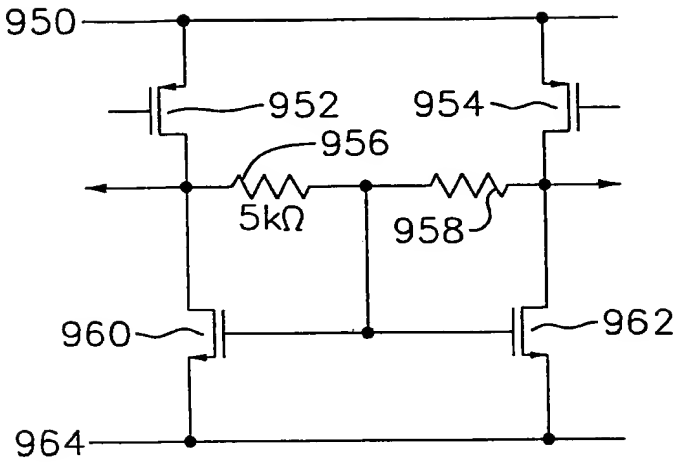

FIG. 16a

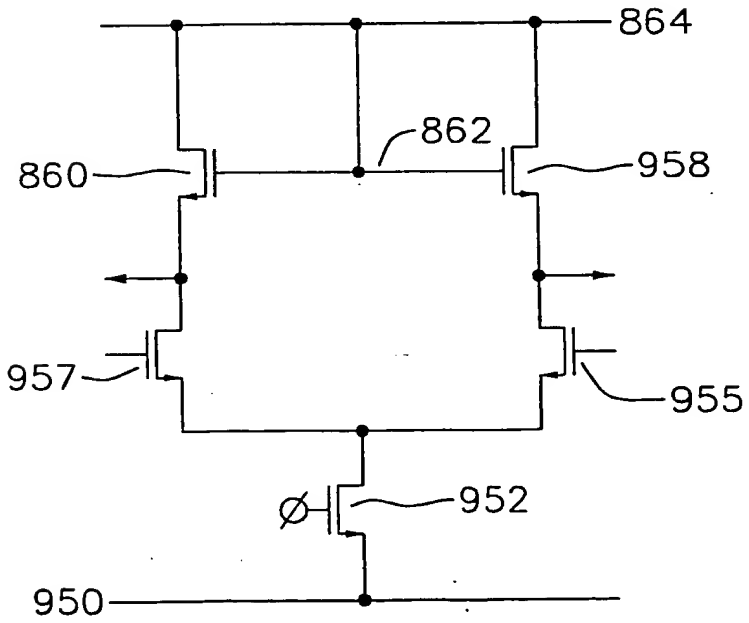

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FIG. 16b

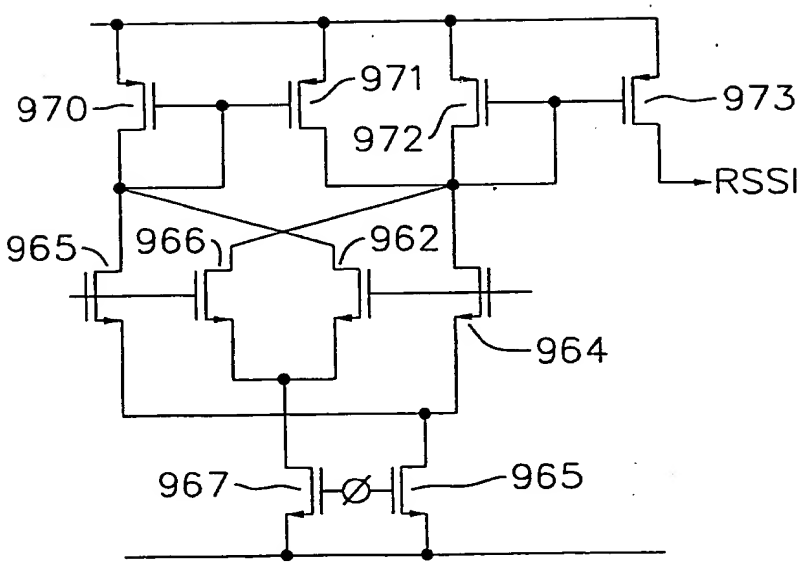

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FIG. 17(a)

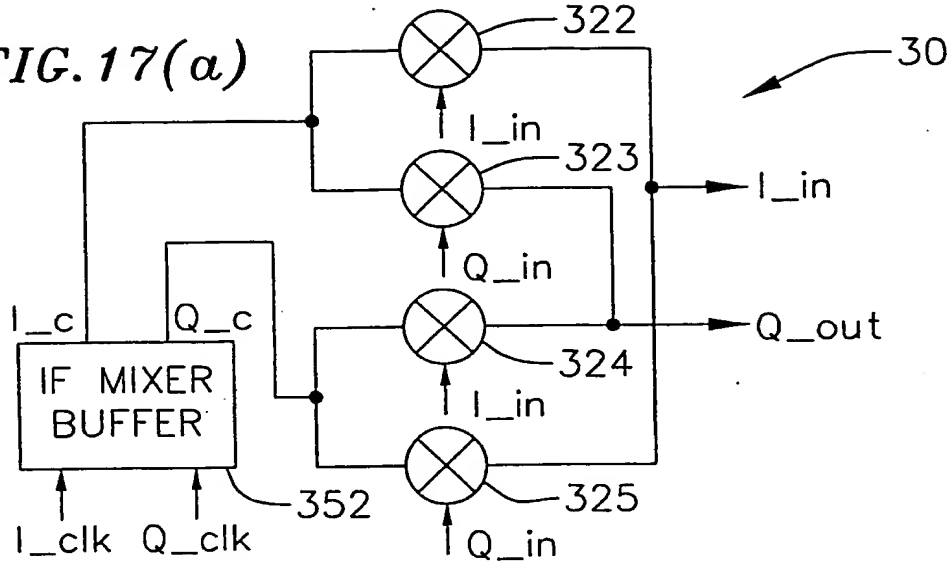
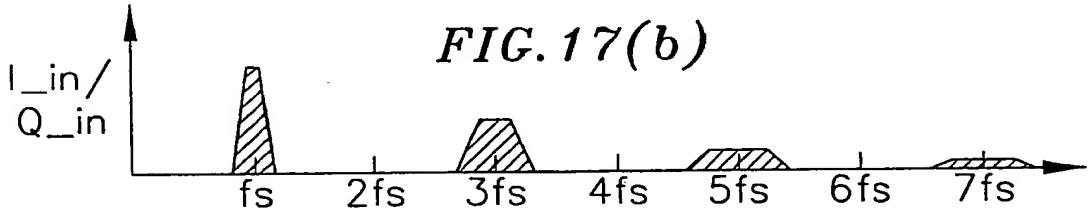
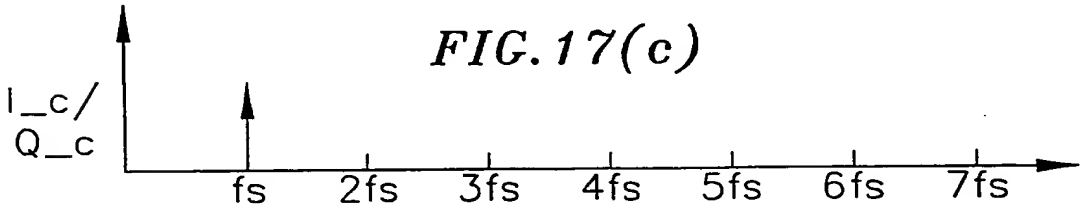


FIG. 17(b)



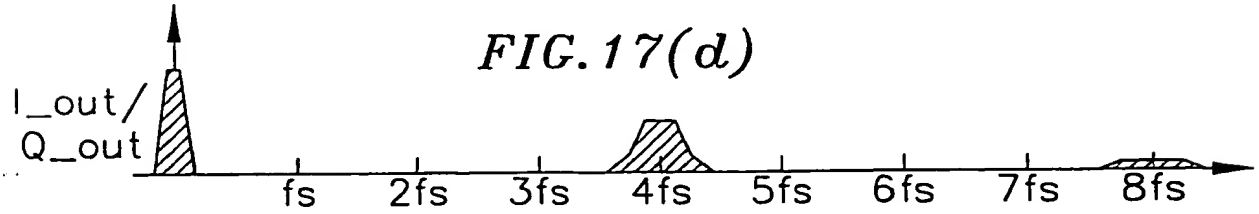
LIMITED IF SIGNAL SPECTRUM

FIG. 17(c)



SINUSOIDAL INPUT SPECTRUM

FIG. 17(d)



IF MIXER OUTPUT SPECTRUM

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FIG. 18

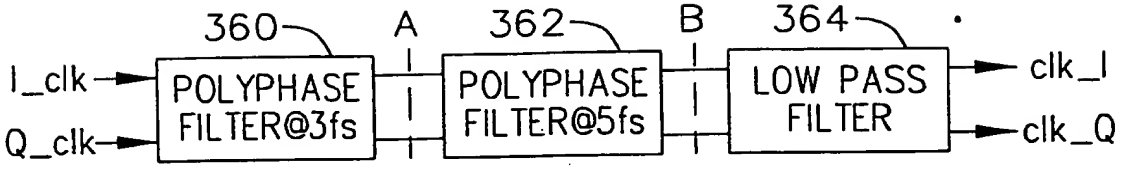
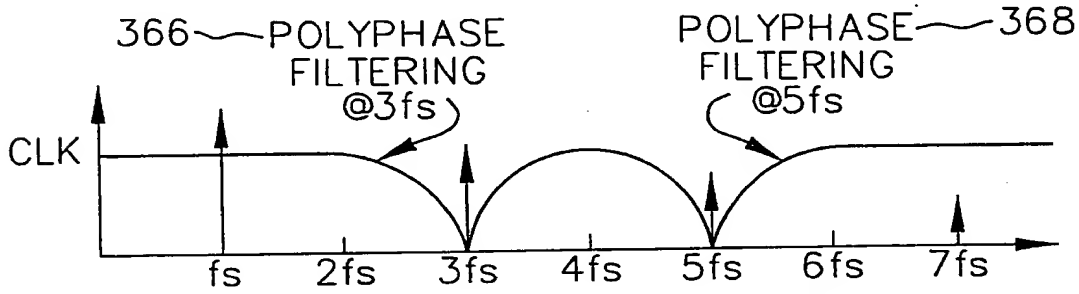
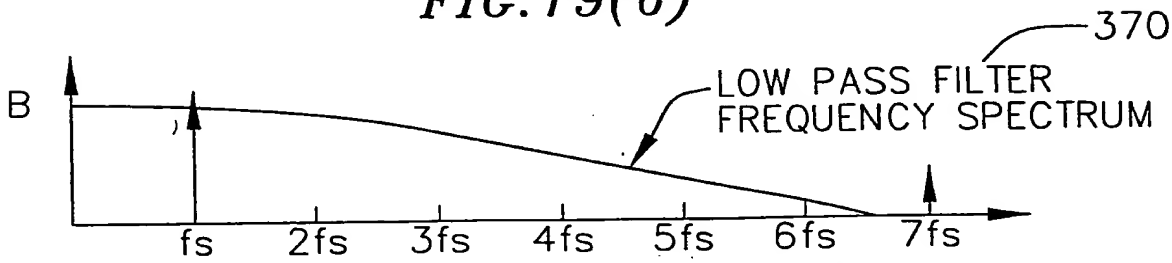


FIG. 19(a)



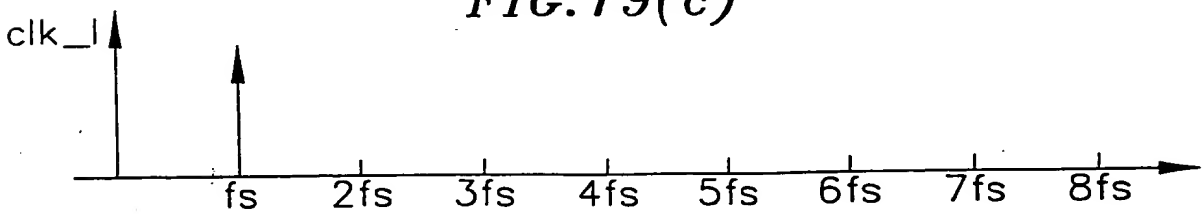
DIFFERENTIAL INPUT CLOCK SIGNAL SPECTRUM

FIG. 19(b)



SIGNAL SPECTRUM AFTER 3fs AND 5fs POLYPHASE

FIG. 19(c)



SINUSOIDAL SIGNAL GENERATION AFTER LOW PASS FILTER

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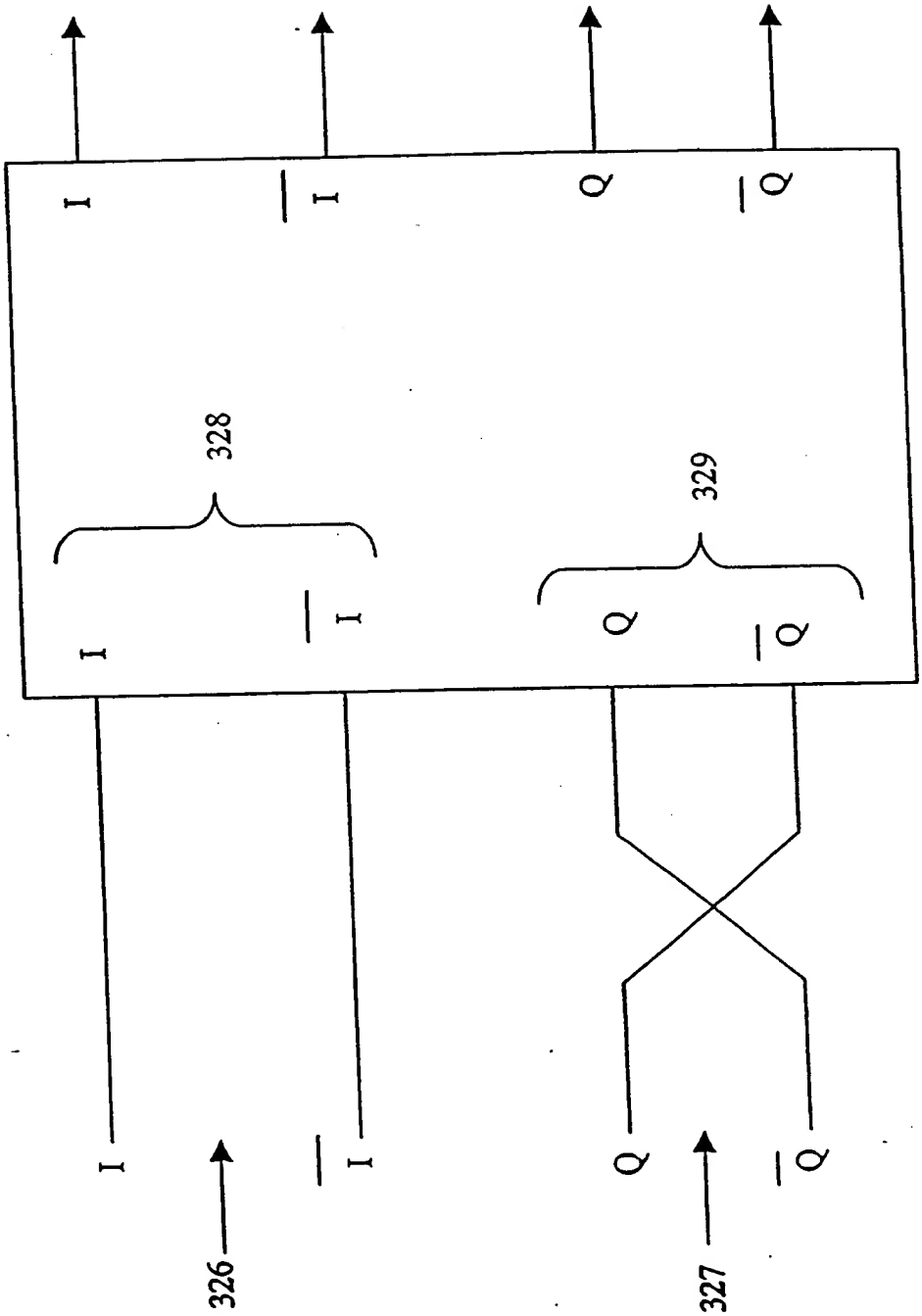
FIG. 19d



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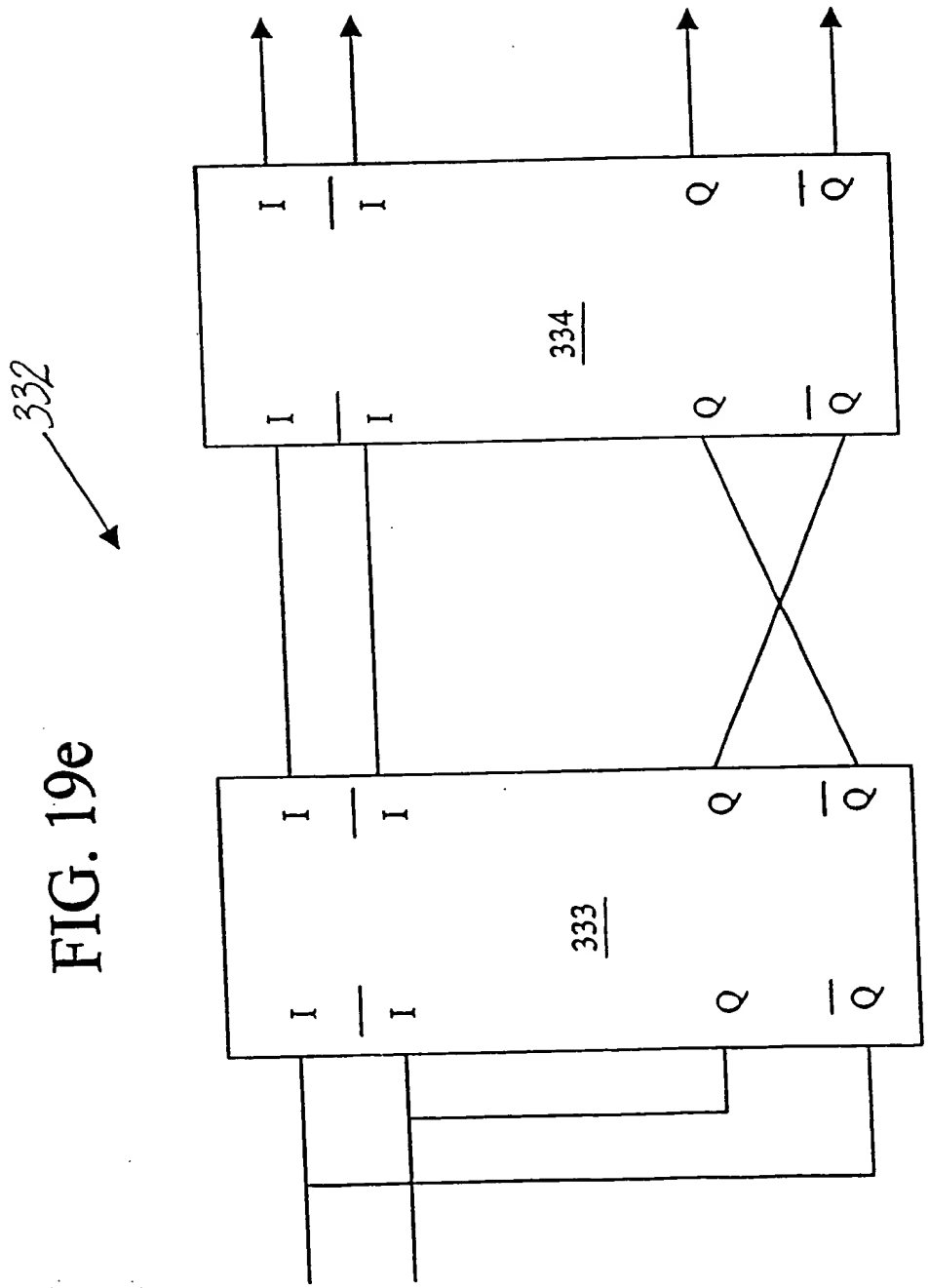

FIG. 19e

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FIG. 19f

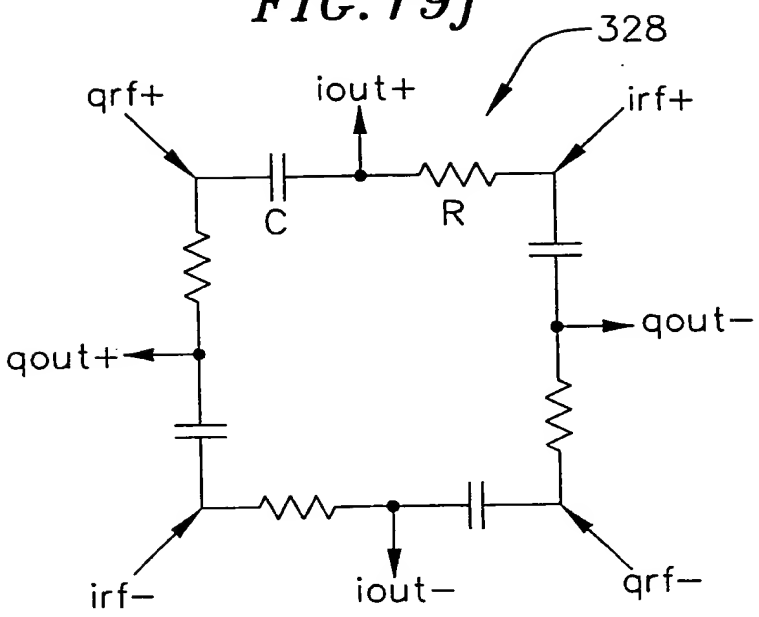
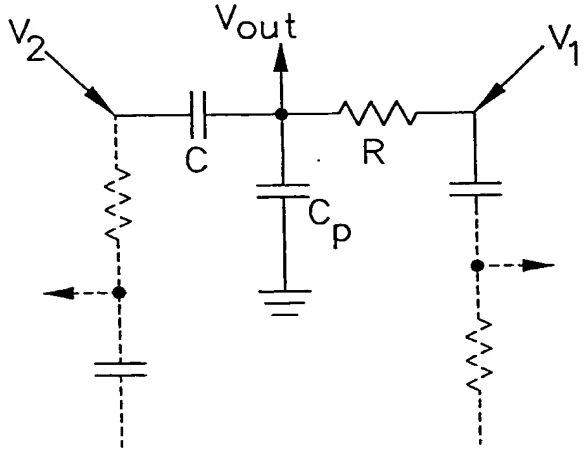


FIG. 19g



$$\omega_p = \frac{1}{R(C_p + C)}$$

$$\omega_o = \frac{1}{RC}$$

$$V_{out} = \frac{V_1}{R(C_p + C)s + 1} + \frac{V_2 RCs}{R(C_p + C)s + 1}$$

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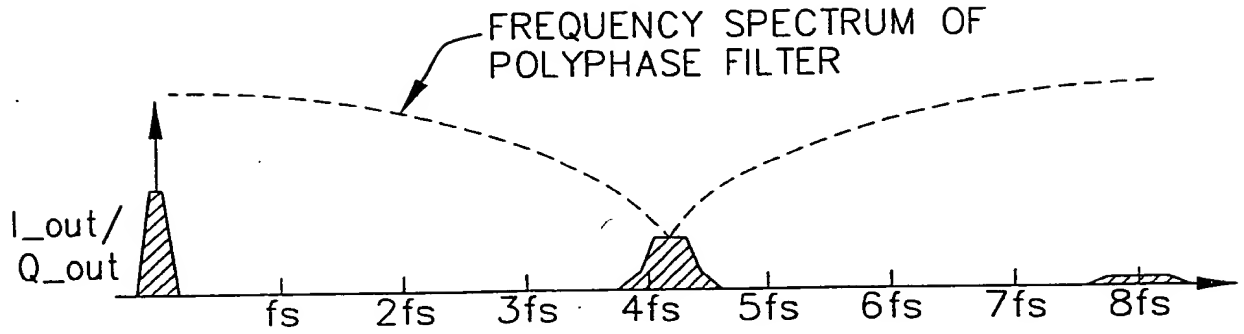
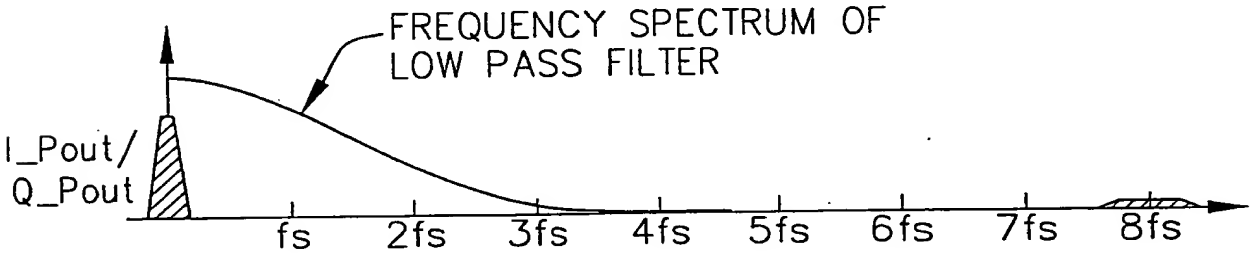
FIG.20(a)



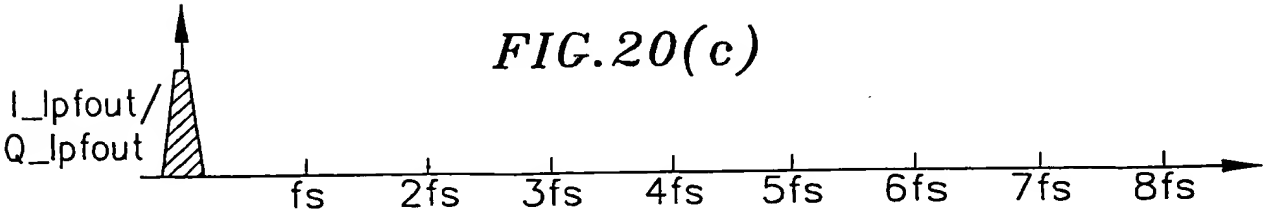
SIGNAL SPECTRUM AT POLYPHASE OUTPUT

FIG.20(b)



SIGNAL SPECTRUM AT POLYPHASE OUTPUT

FIG.20(c)



SIGNAL SPECTRUM AT LOW PASS FILTER OUTPUT

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FIG.21

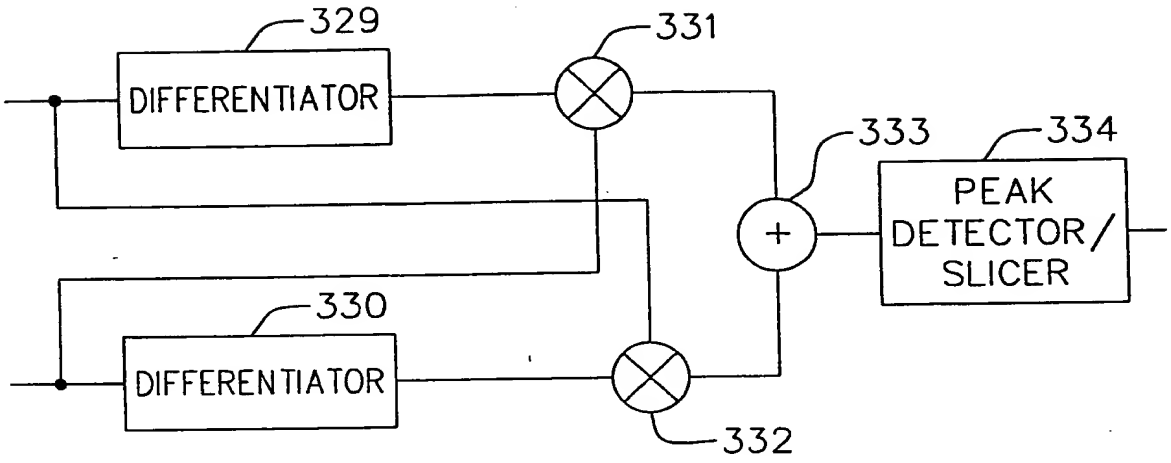

FIG.22

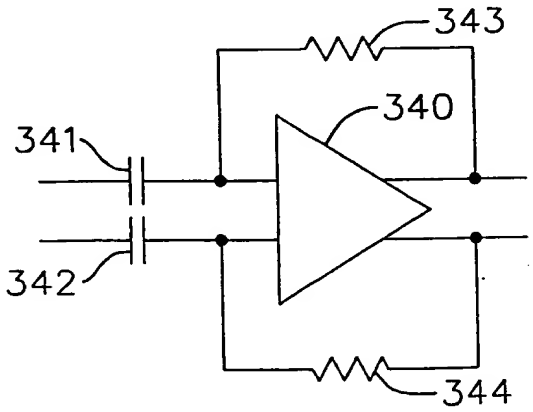

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FIG.23

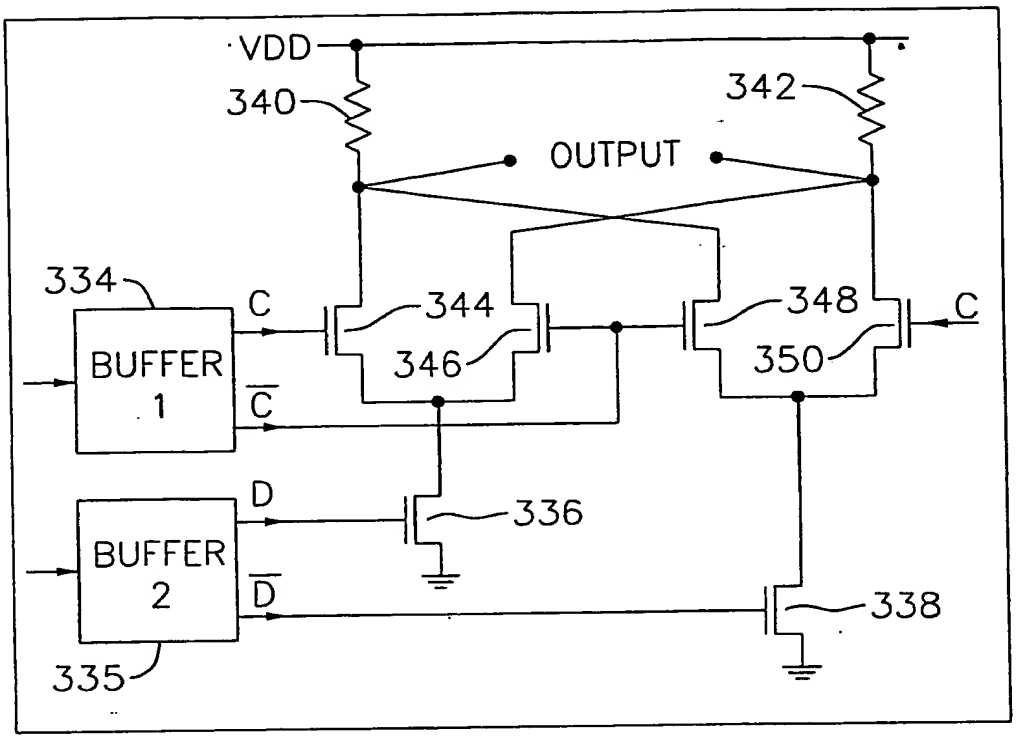

FIG.24

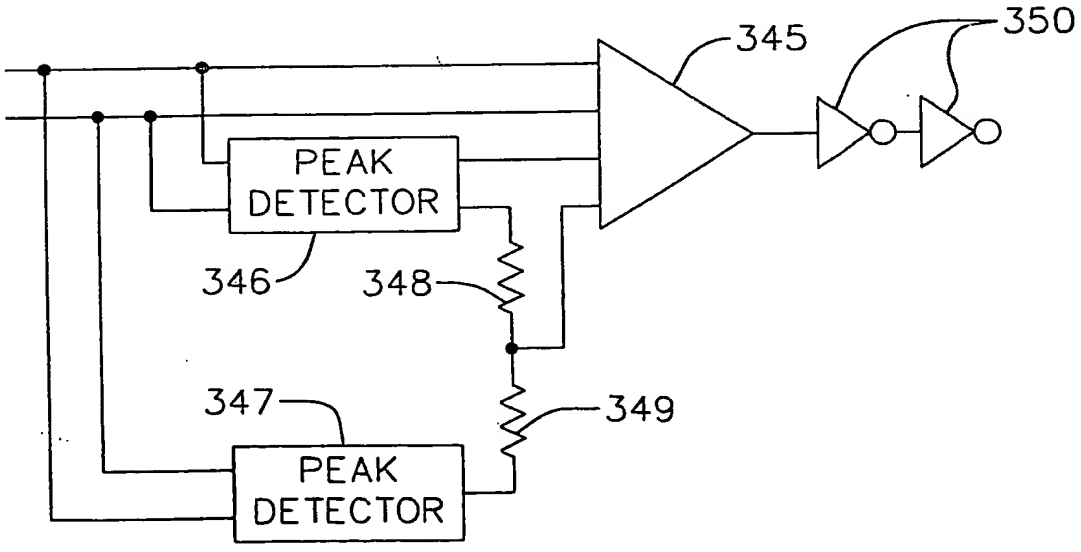

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FIG.25

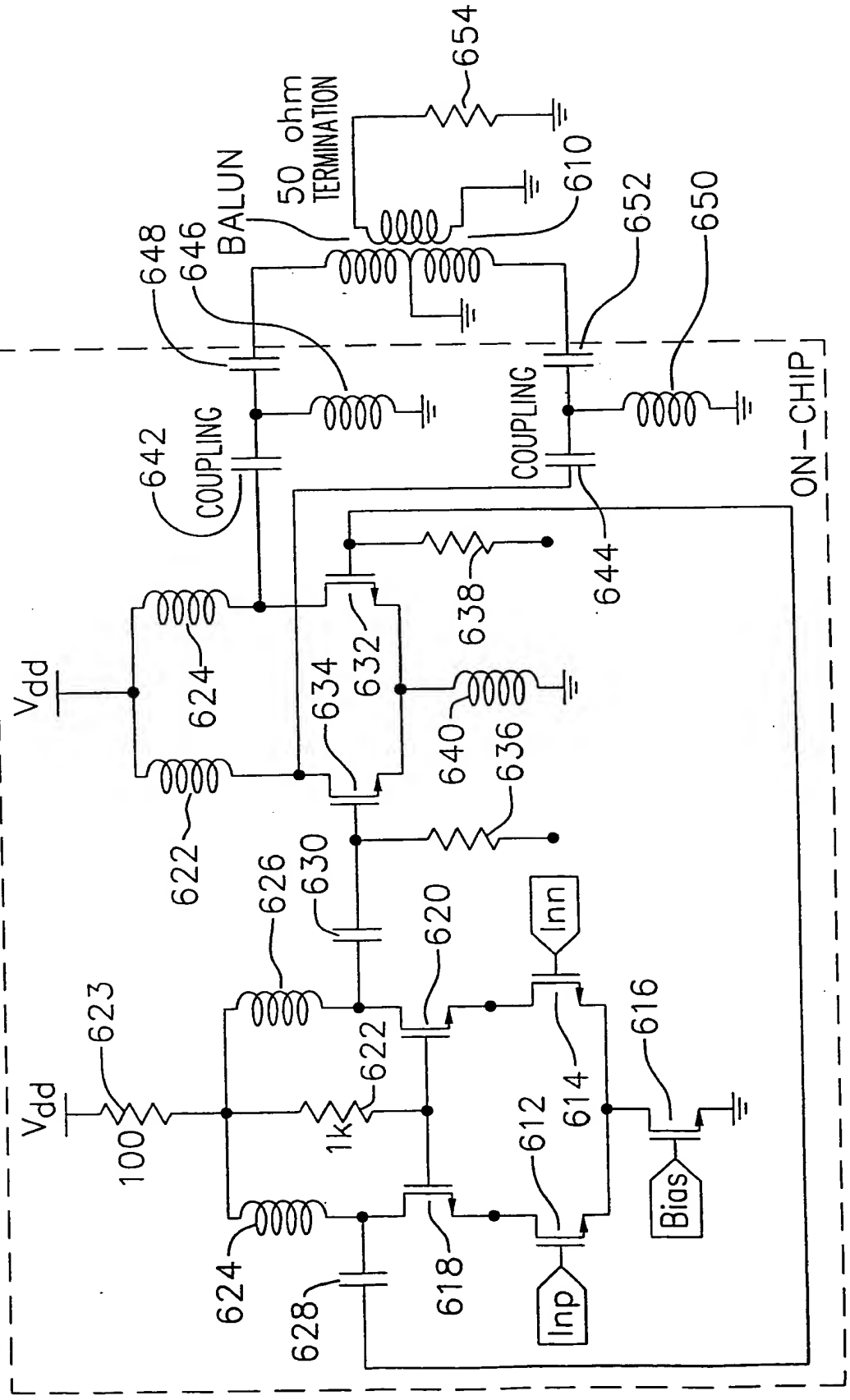

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FIG.26a

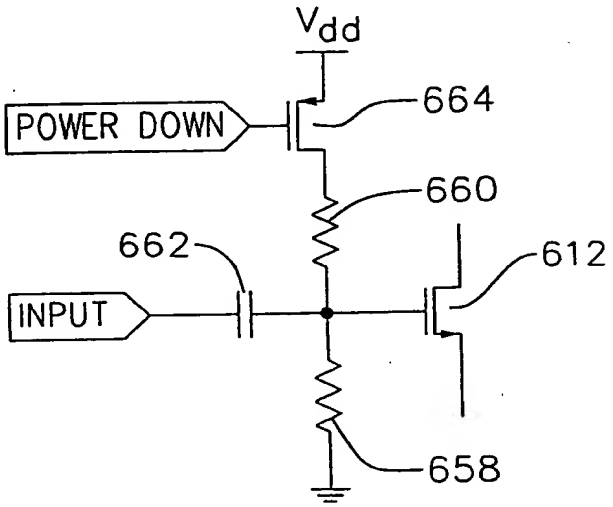

FIG.26b

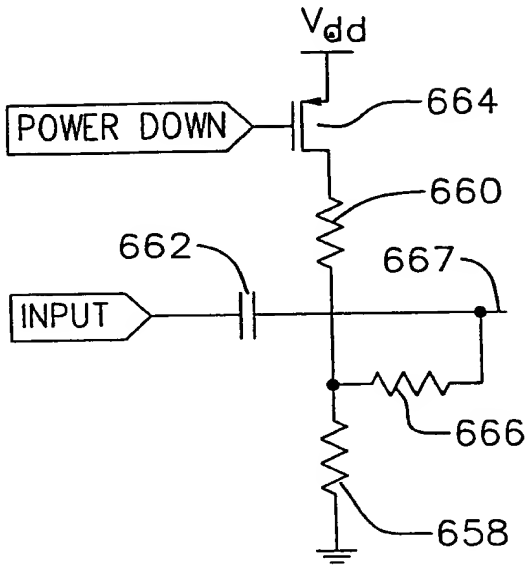

FIG.27

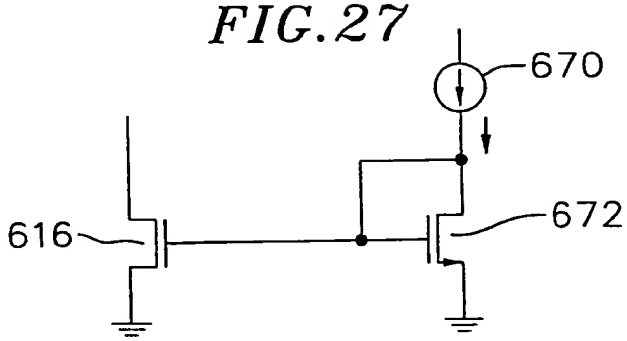

FIG.28

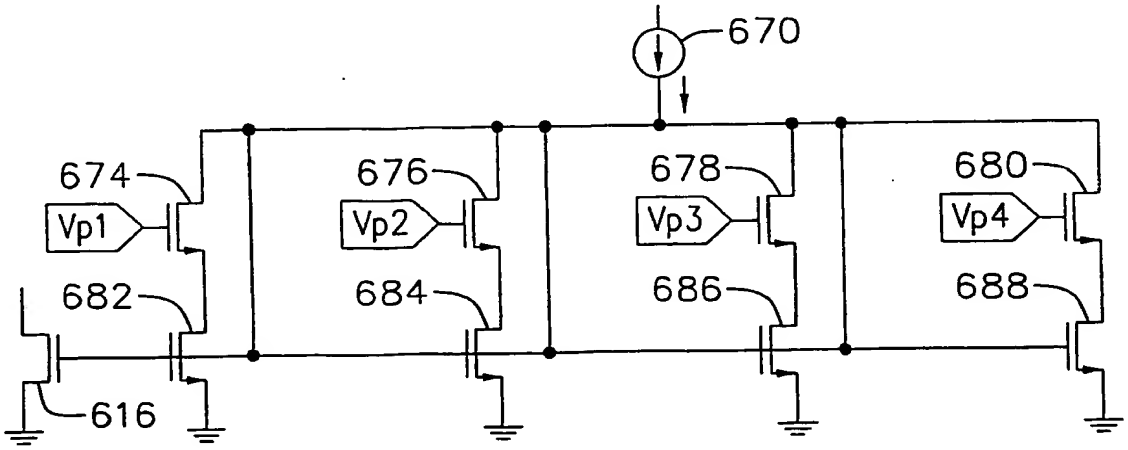

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FIG.29

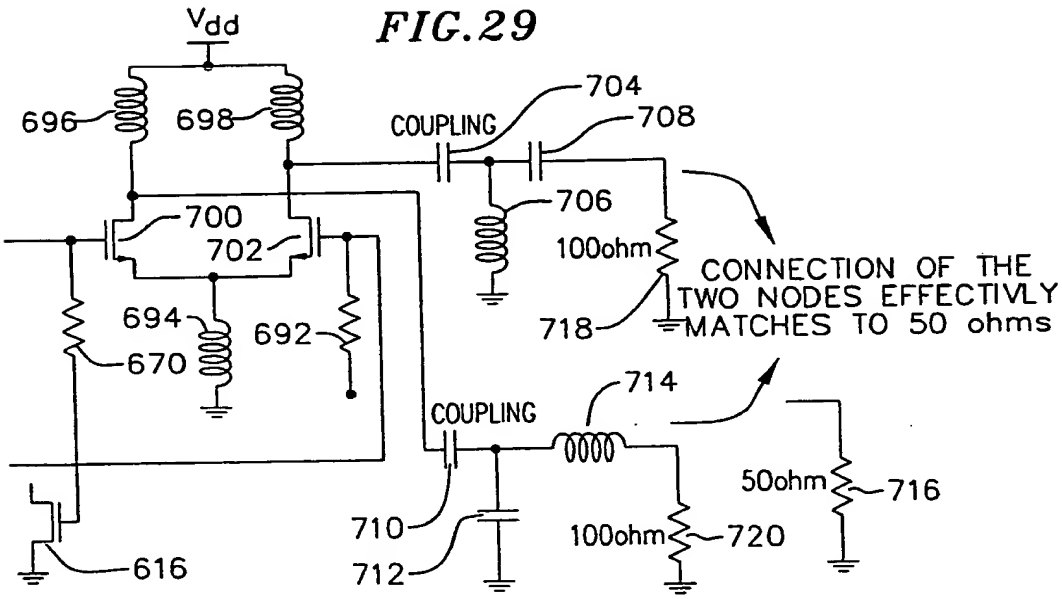
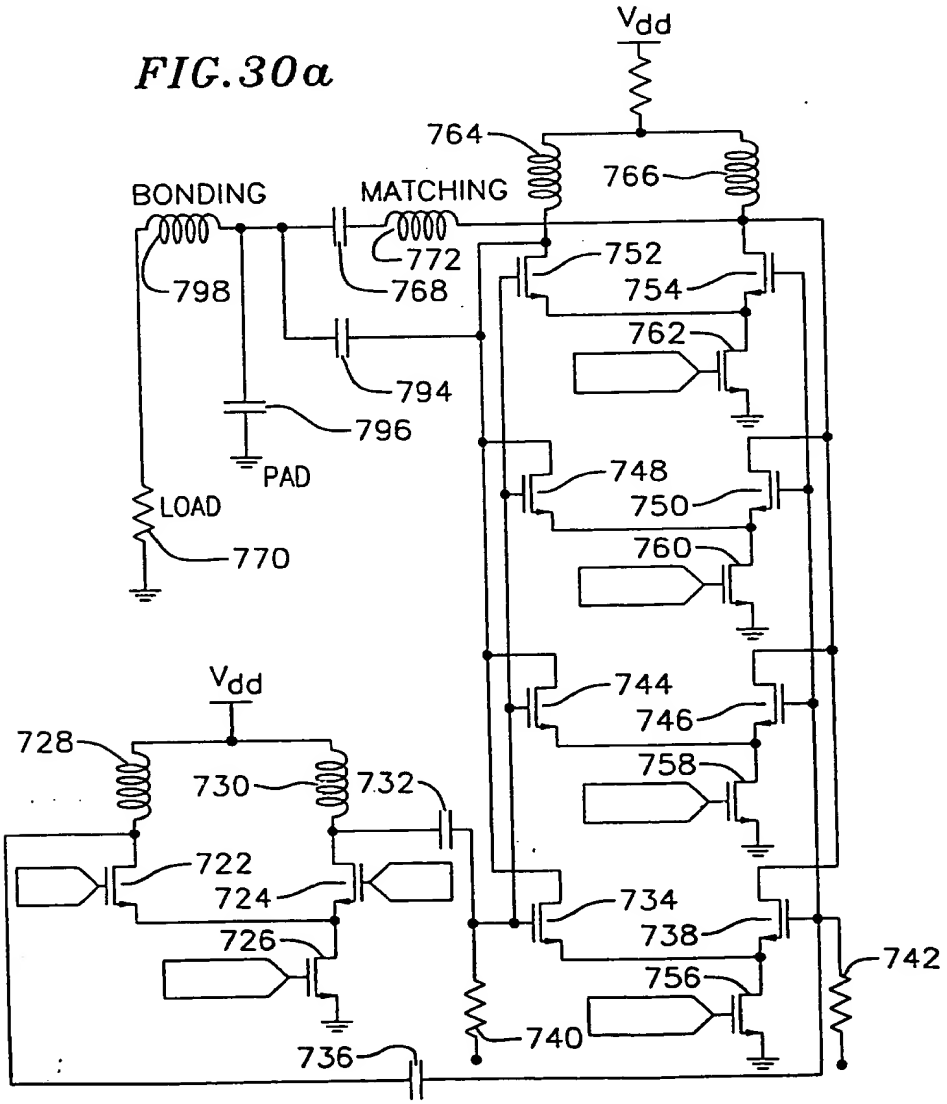


FIG.30a



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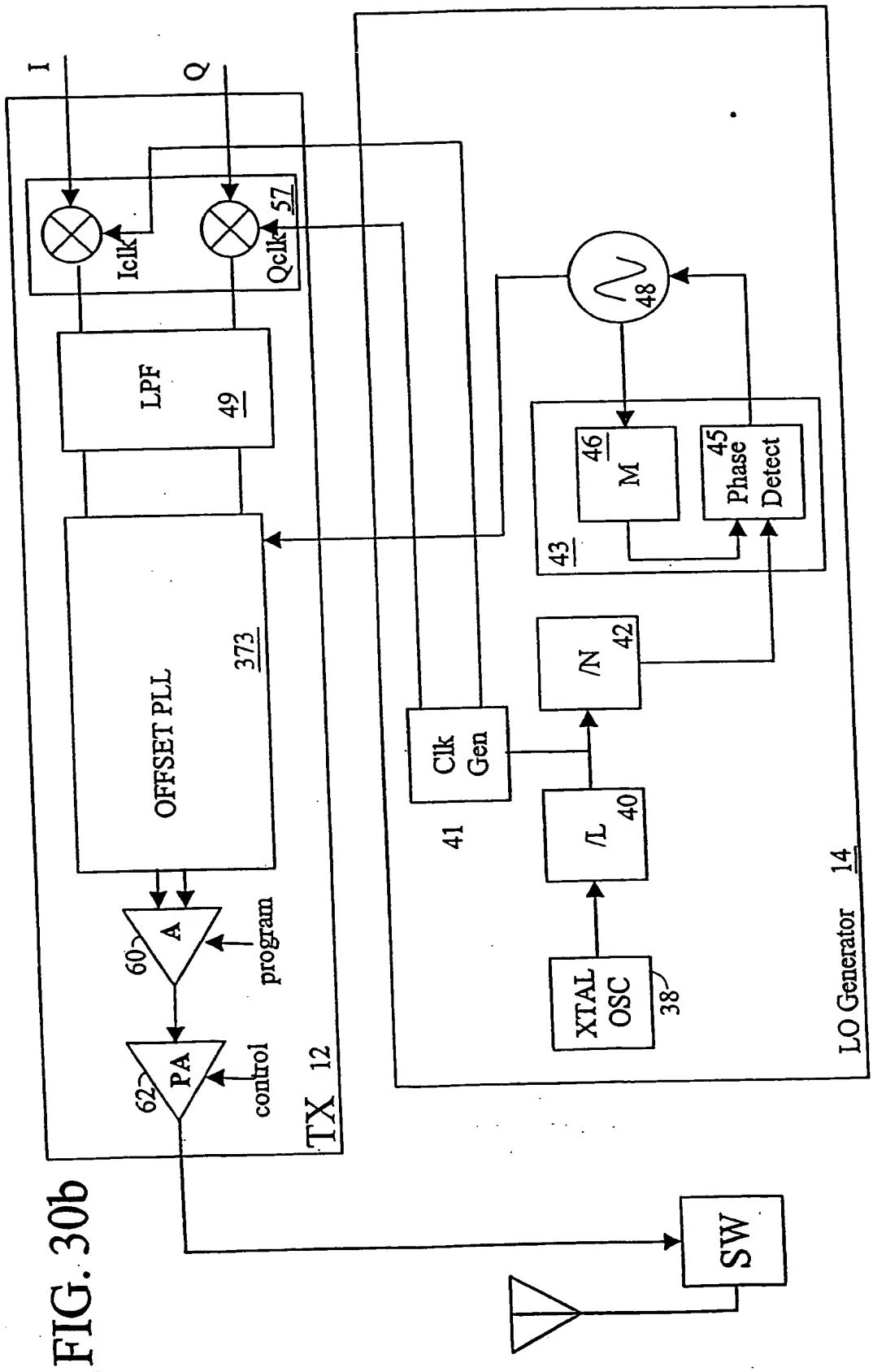

FIG. 30b

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FIG. 30c

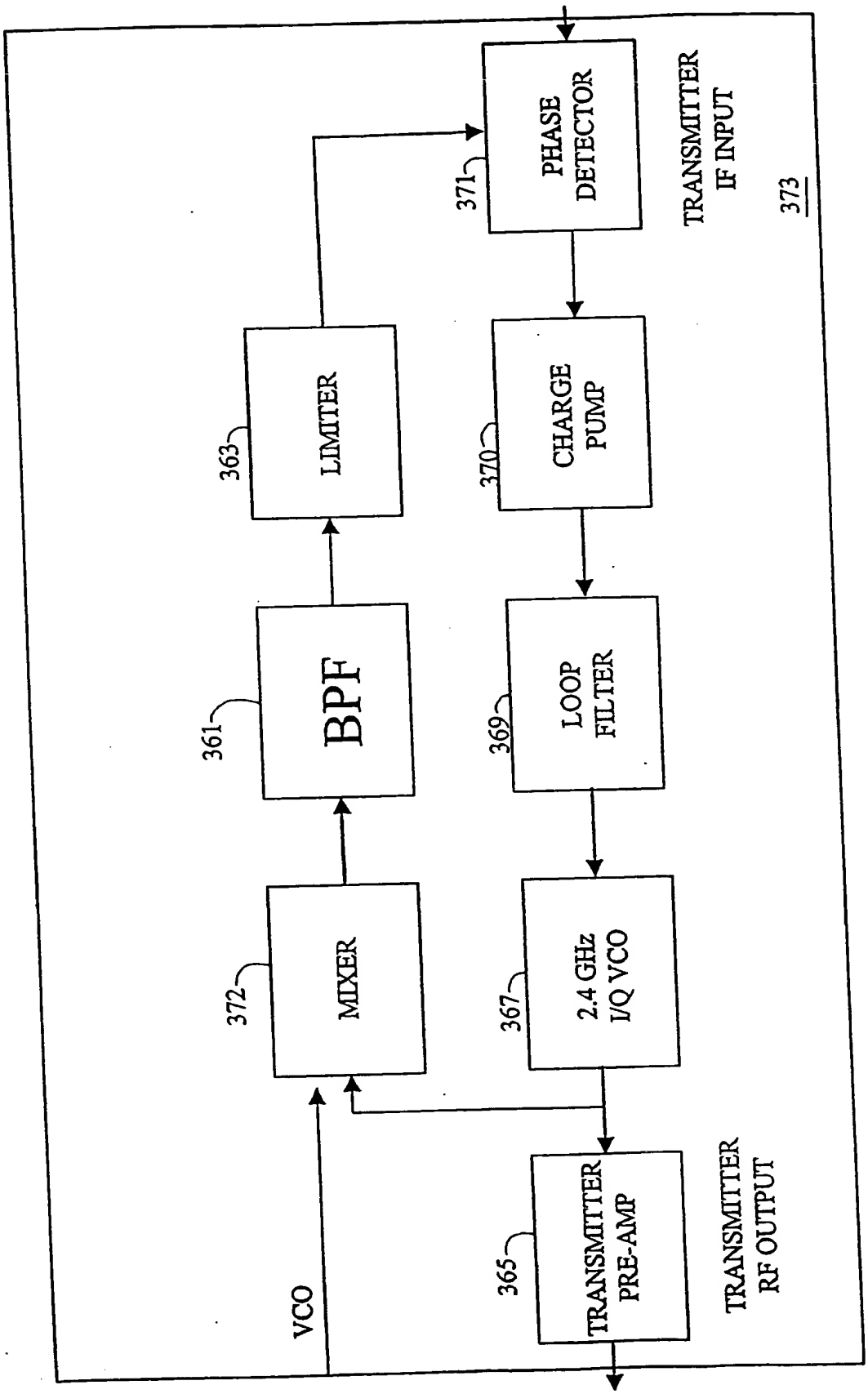

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FIG. 30d

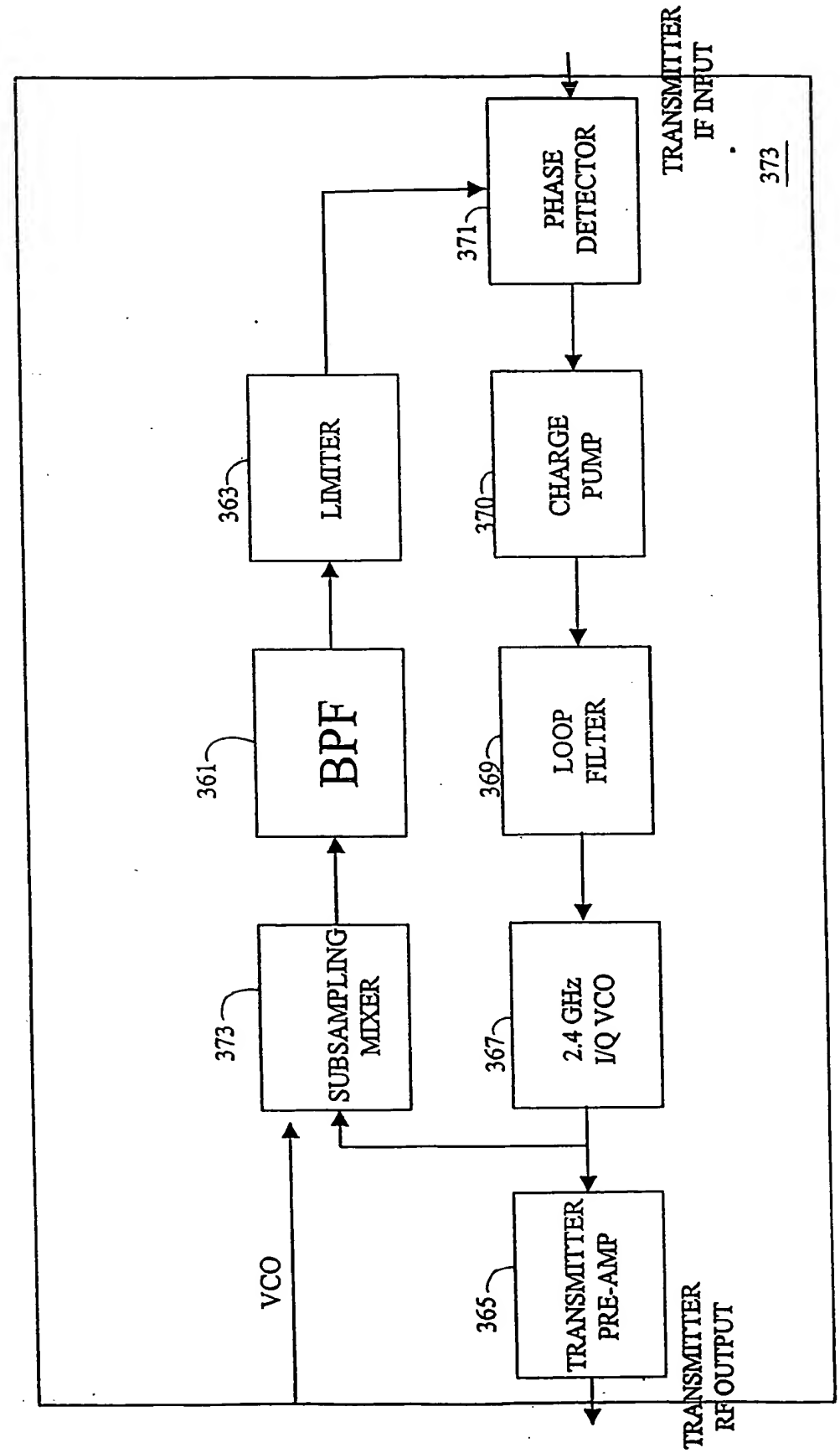

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Fig. 30e

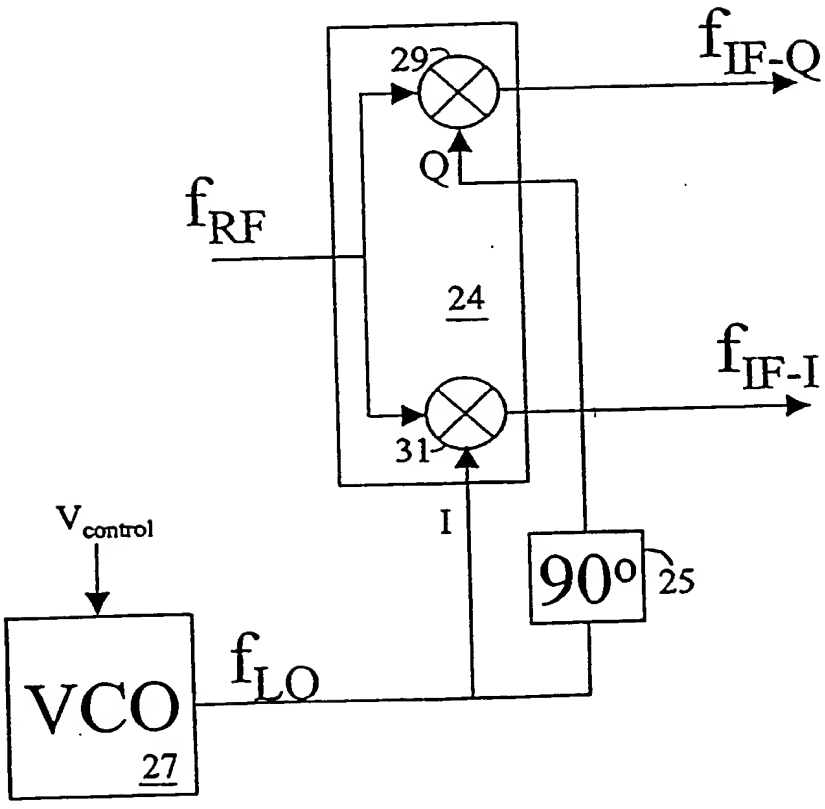

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Fig. 30f

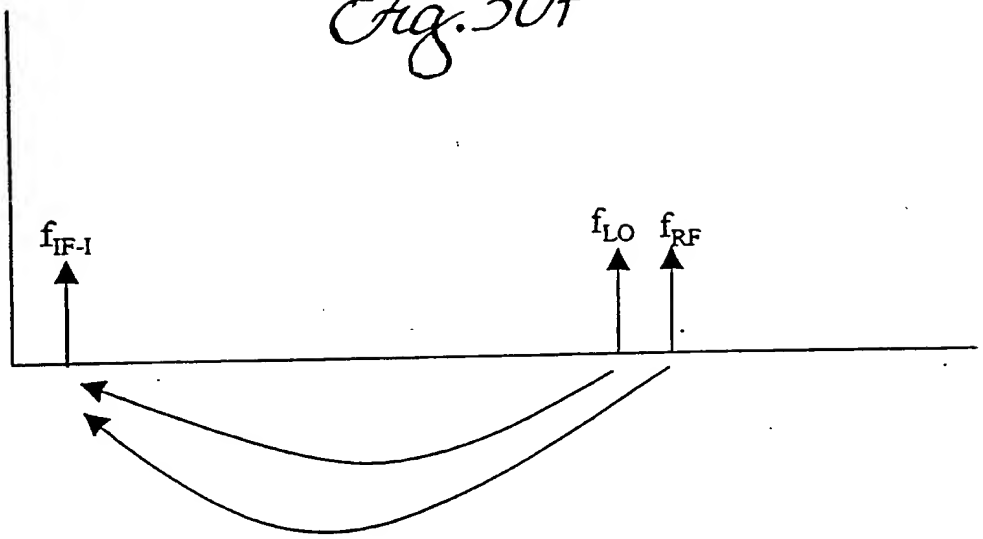
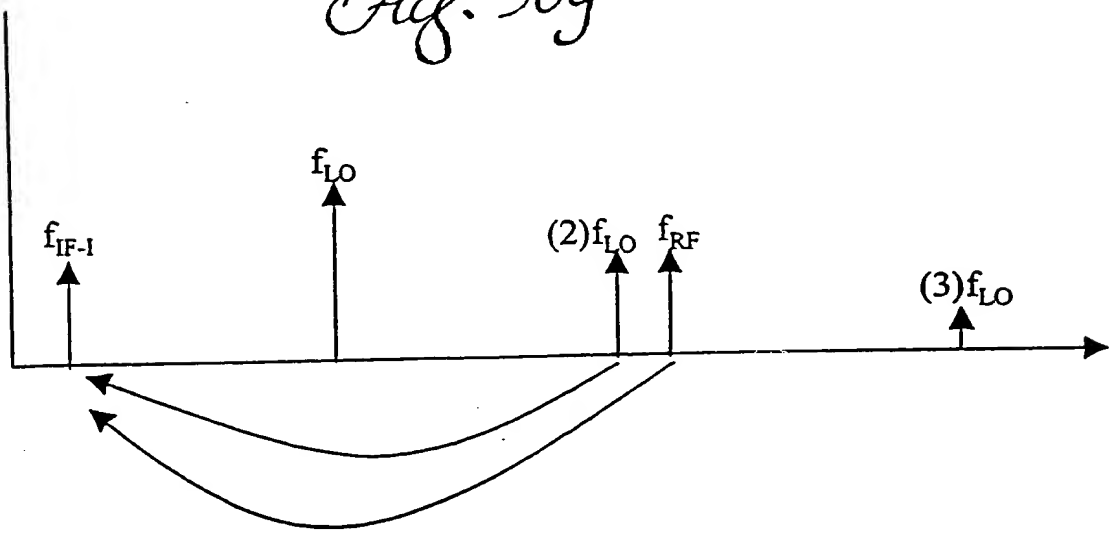


Fig. 30g



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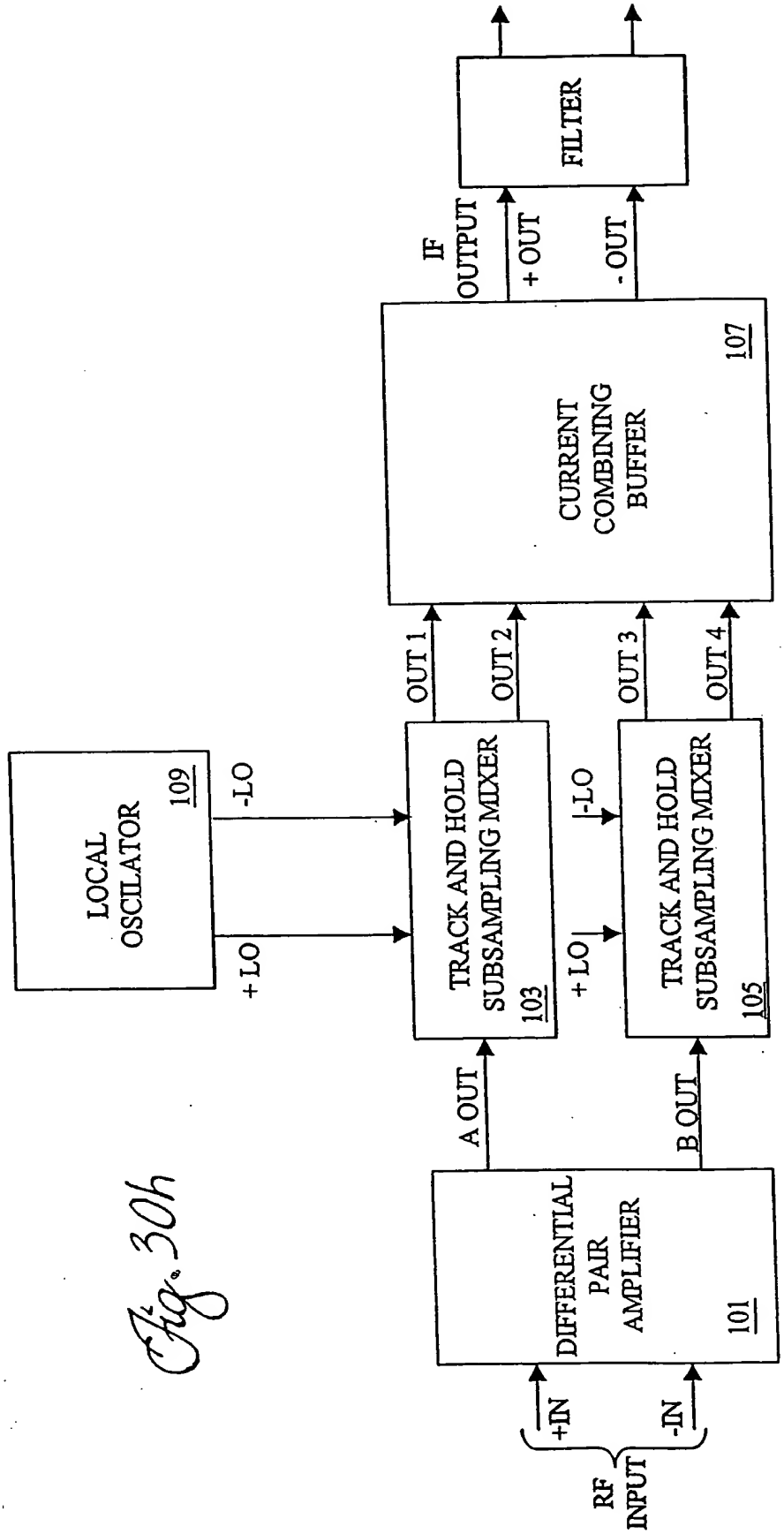

Fig. 30h

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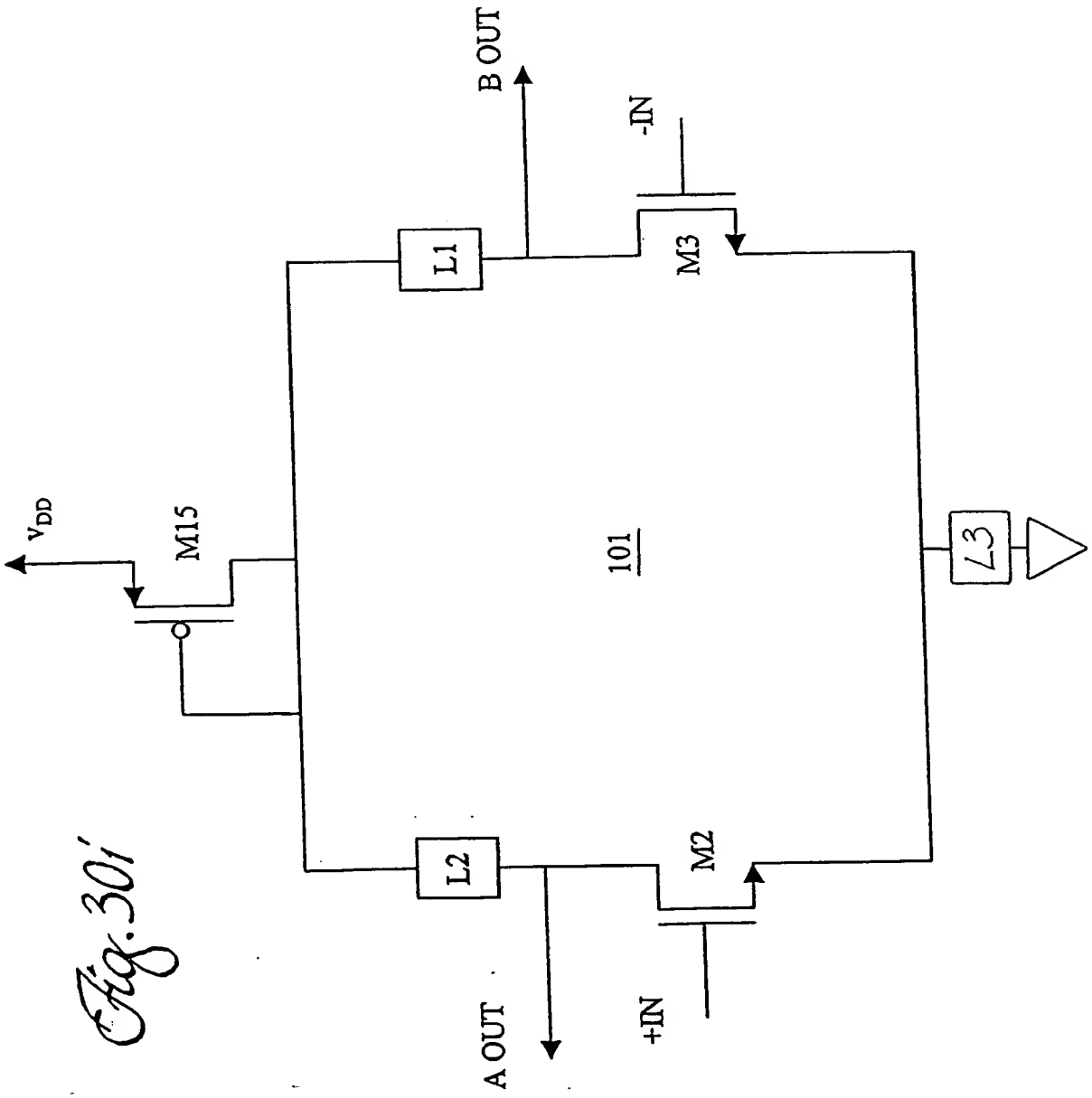

Fig. 301

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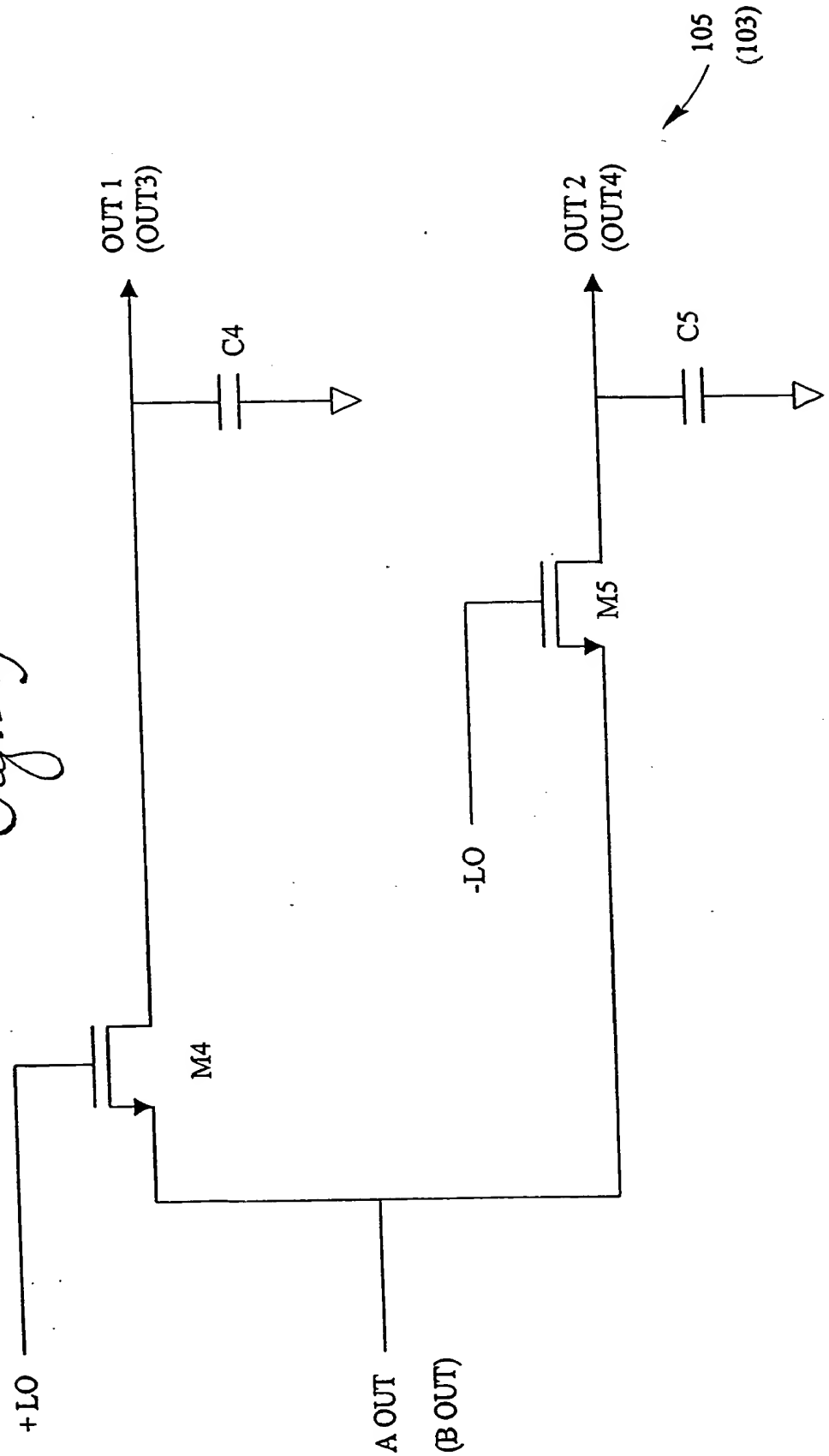

Fig. 30j

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Fig. 30k

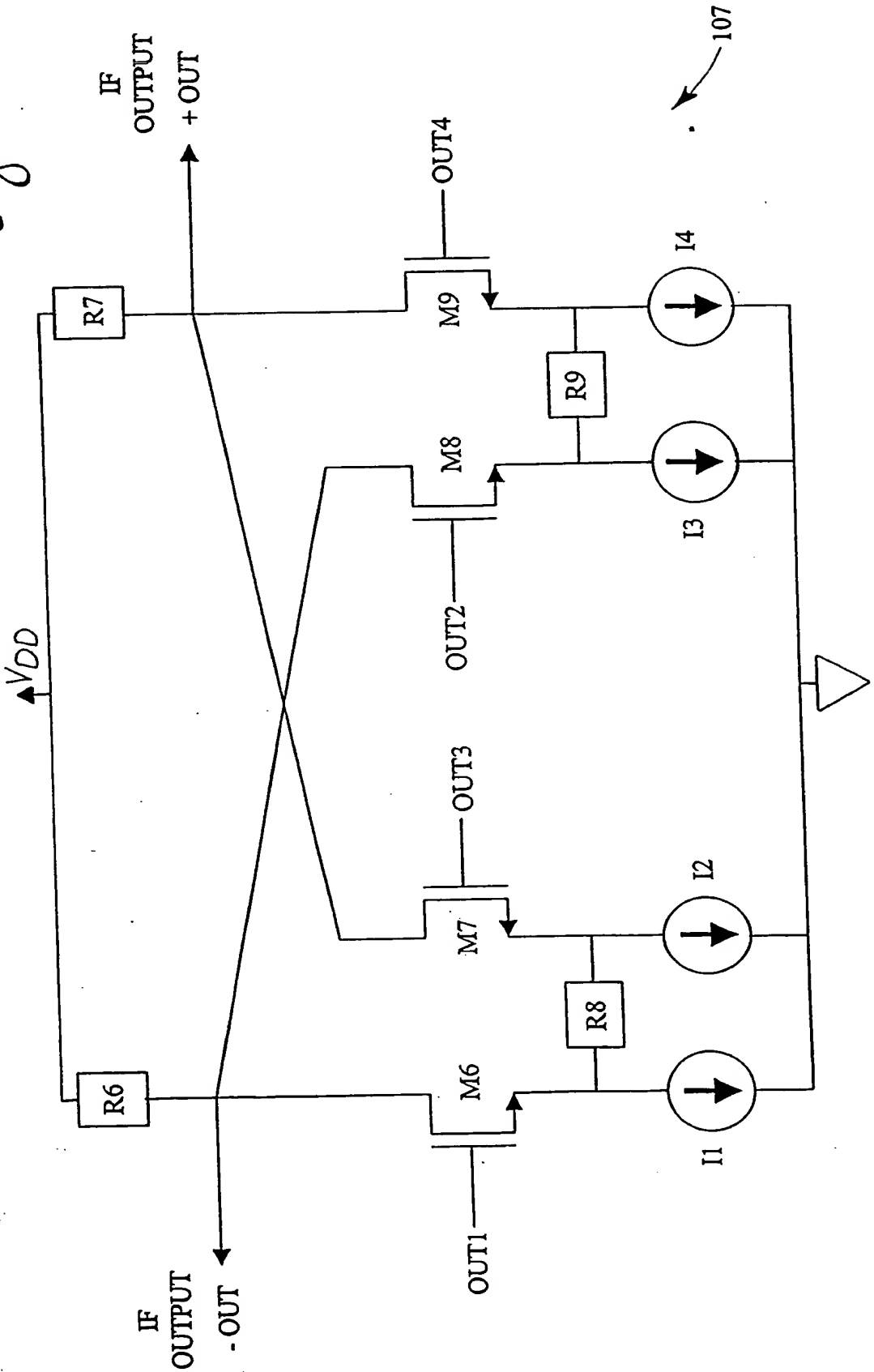

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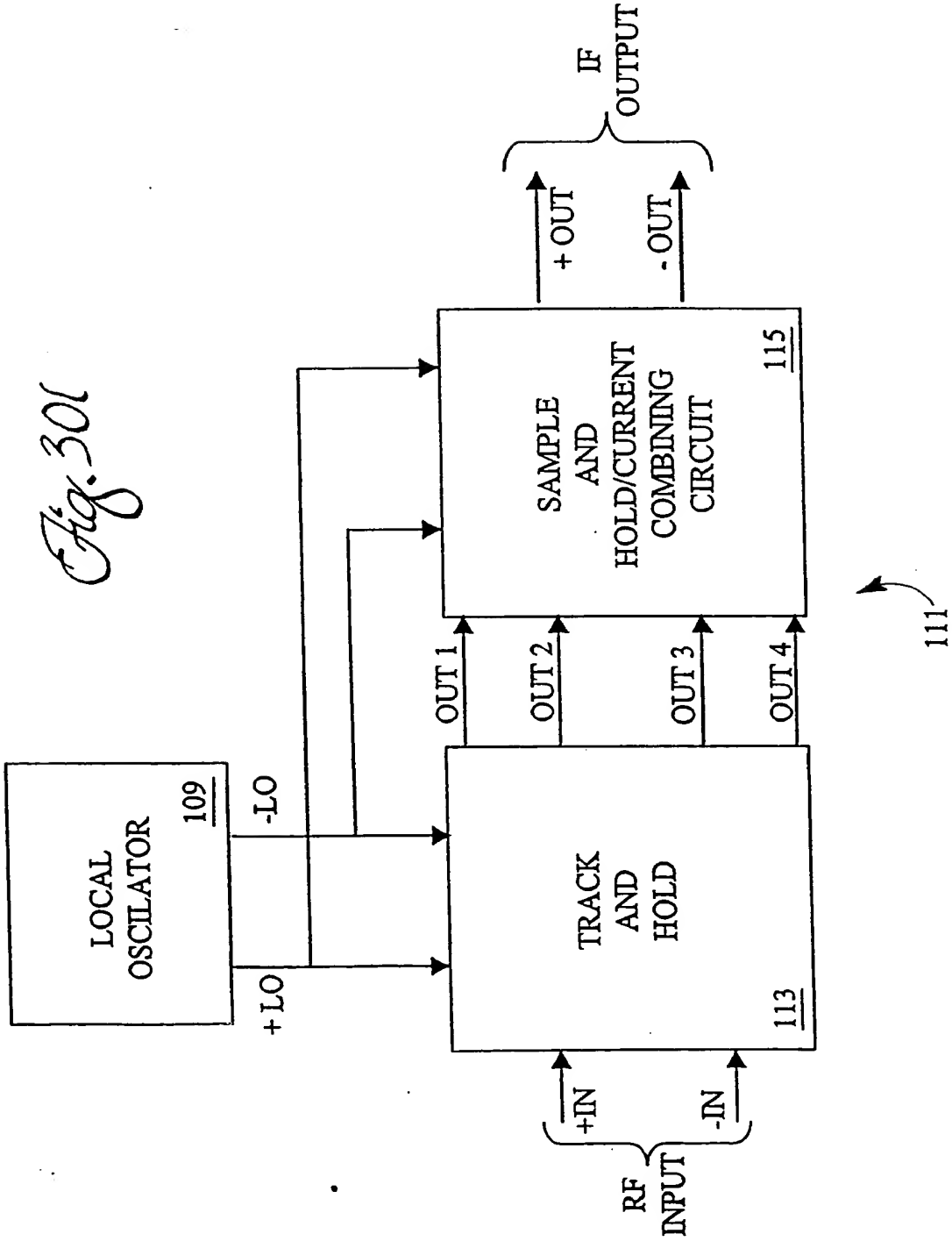
Fig. 30



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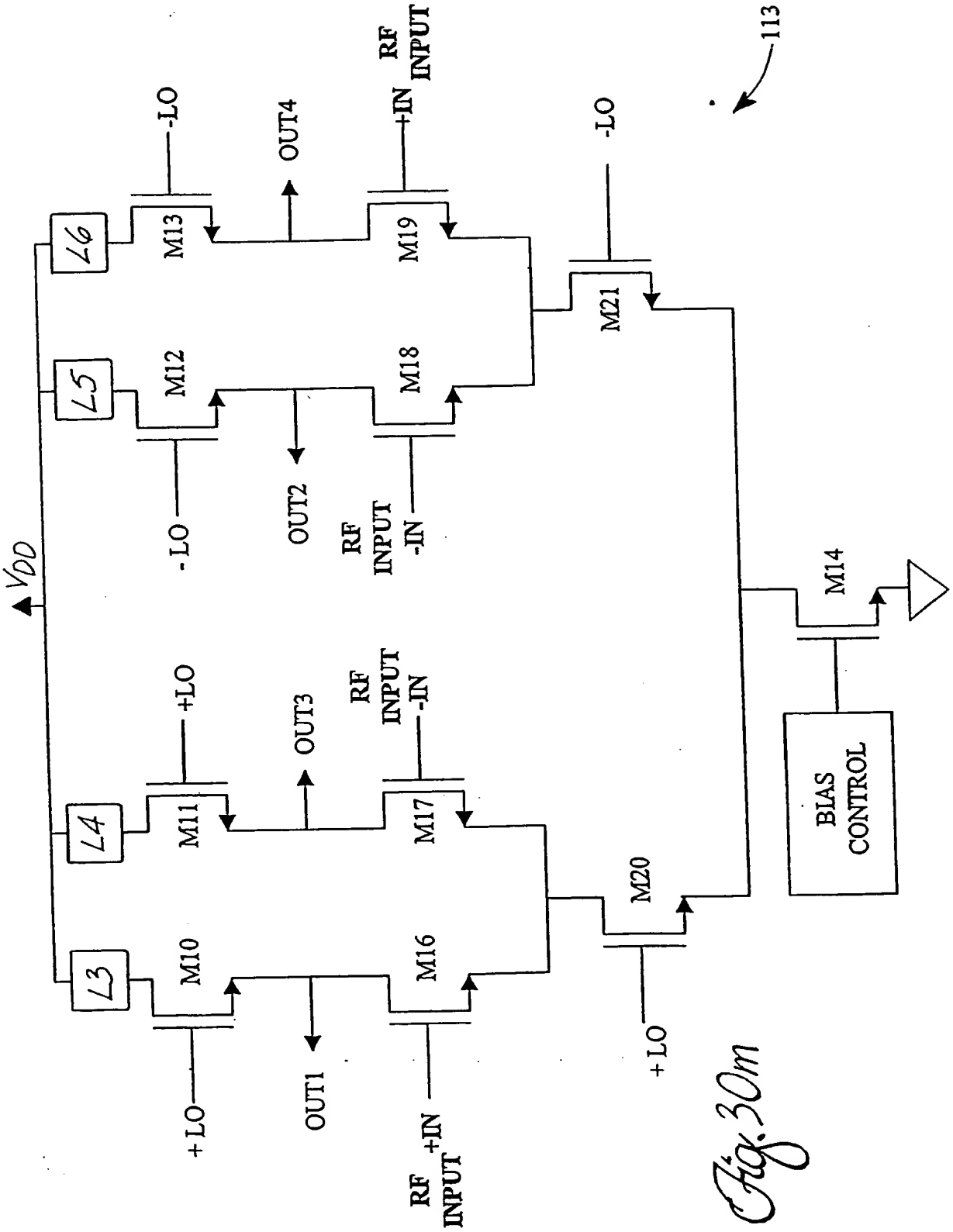

Fig. 30m

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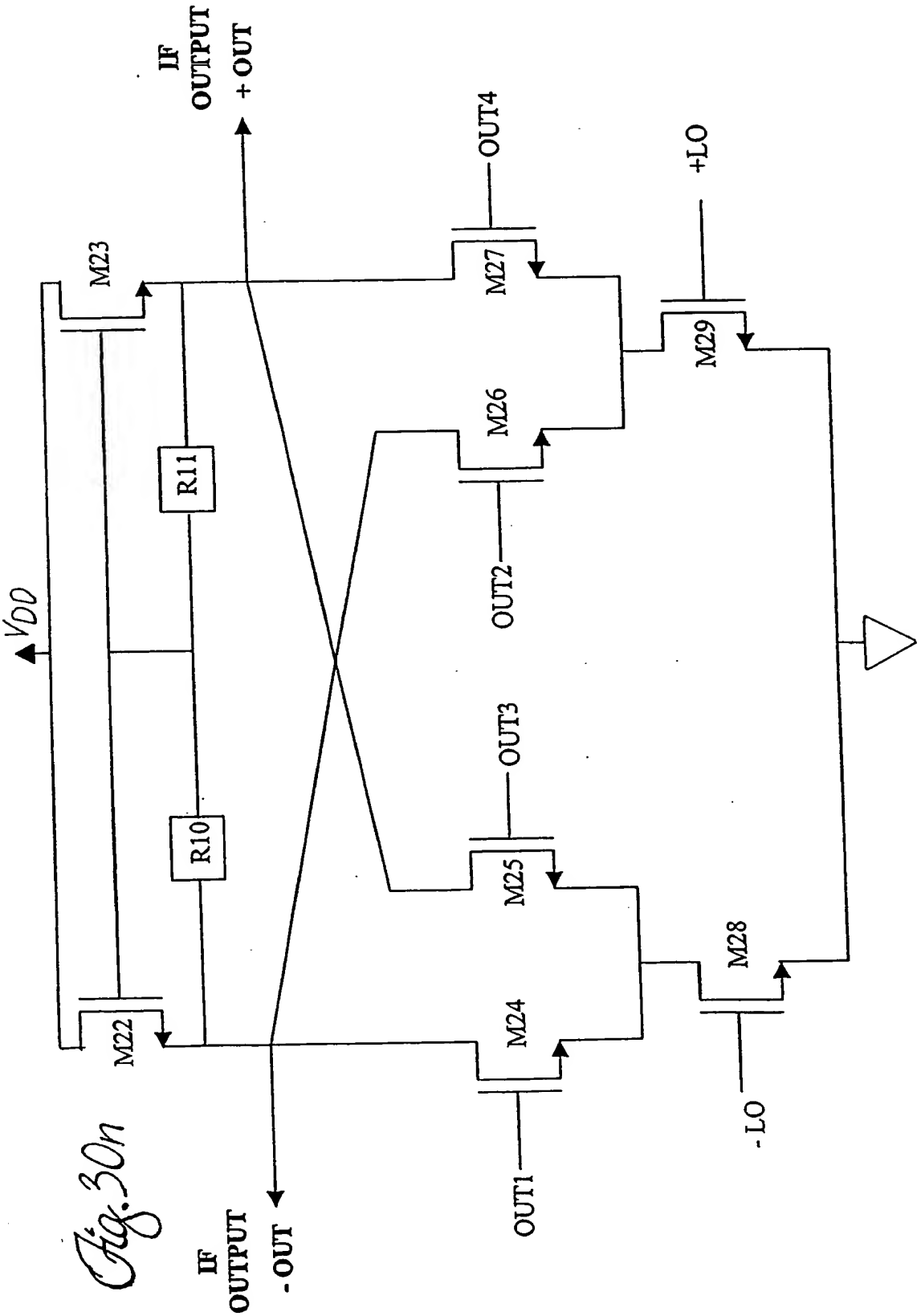

Fig. 30n

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FIG.31a

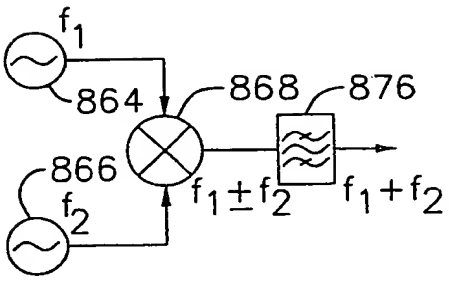

FIG.31b

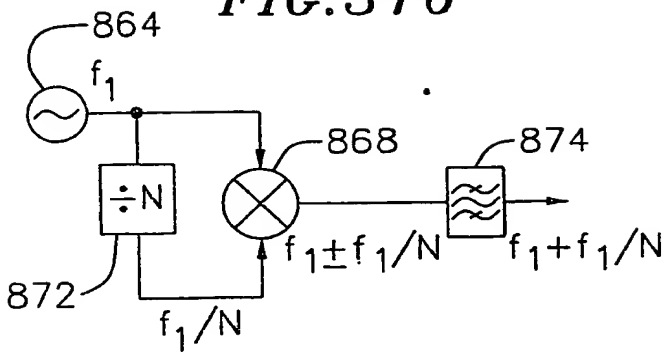

FIG.32

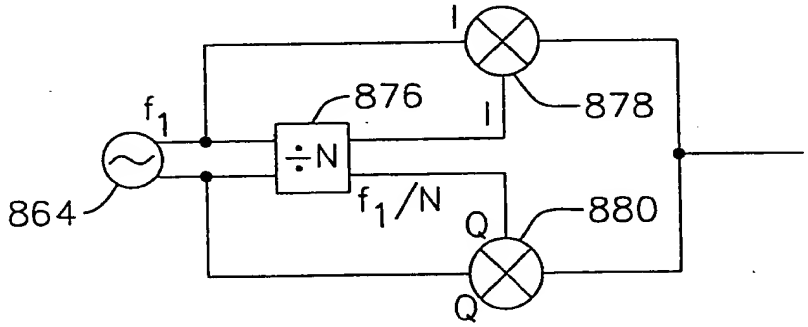

FIG.33

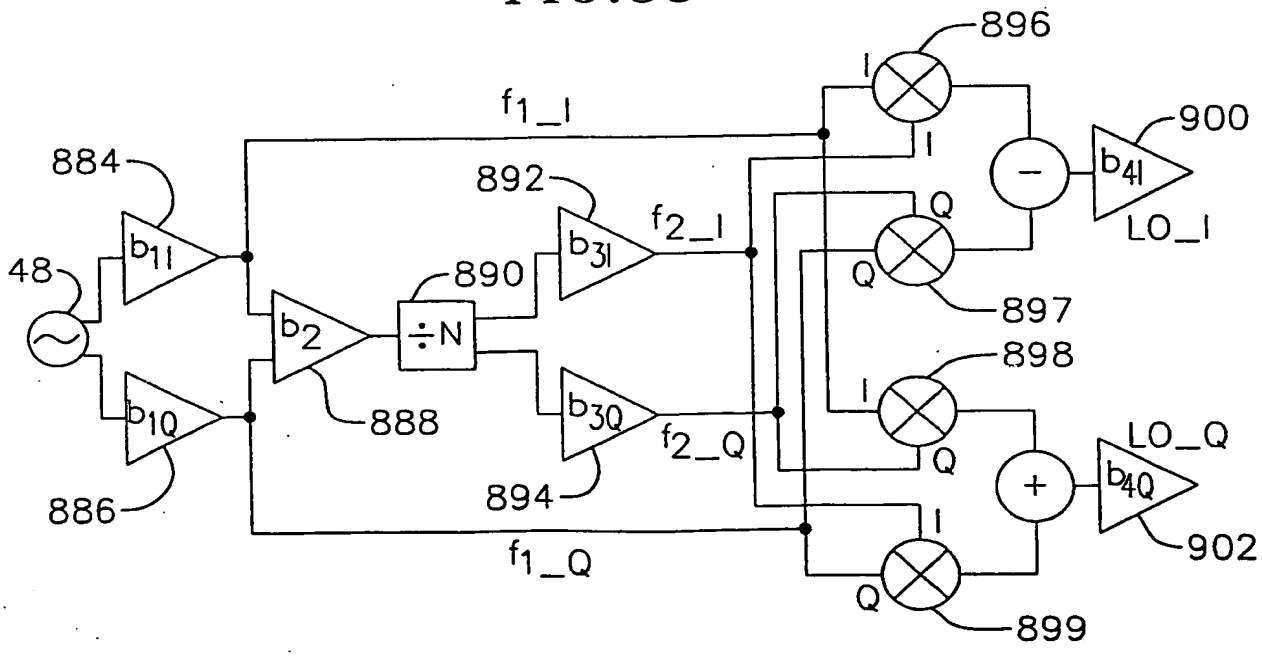

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FIG.33b

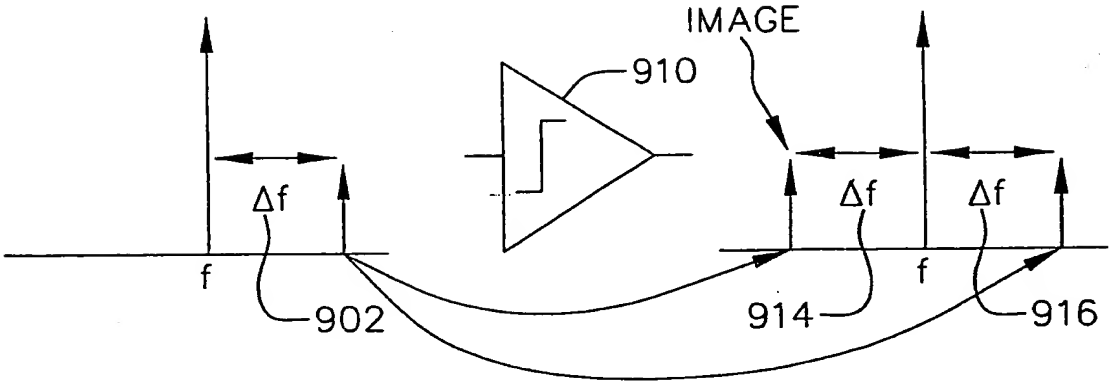

FIG.34

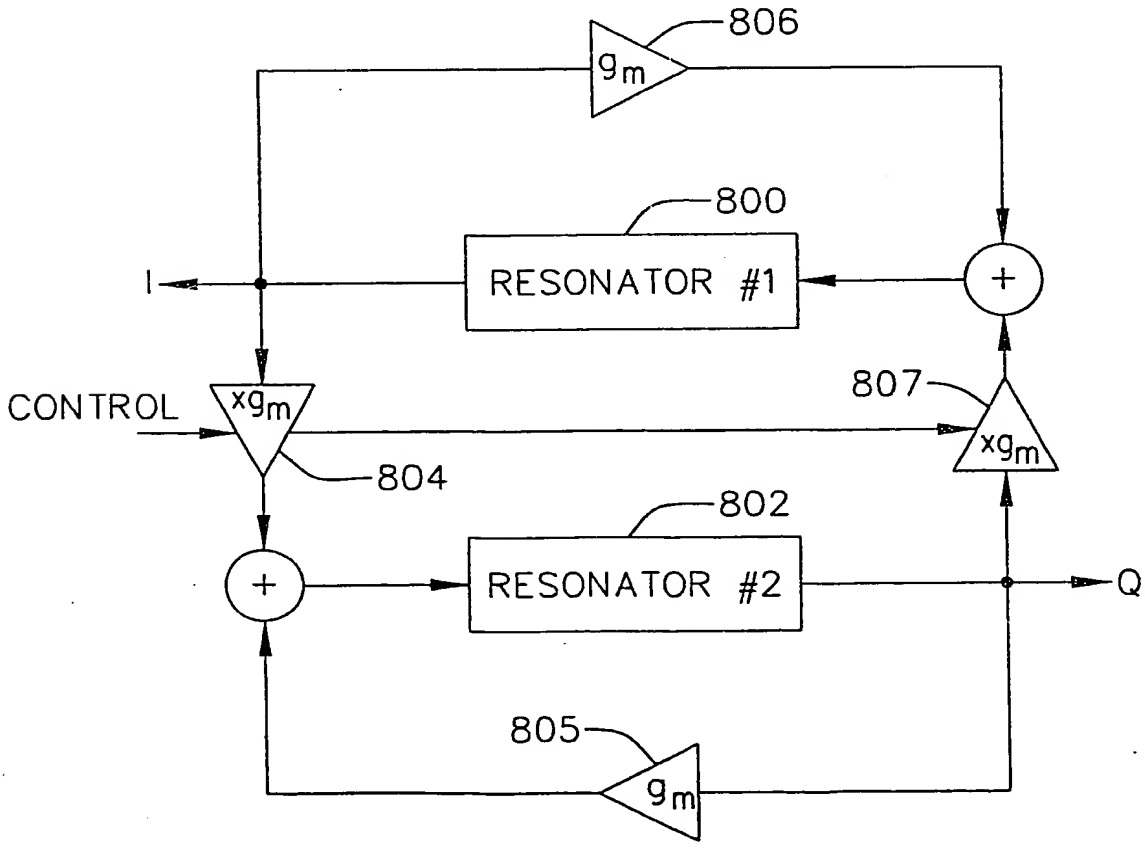

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FIG.35

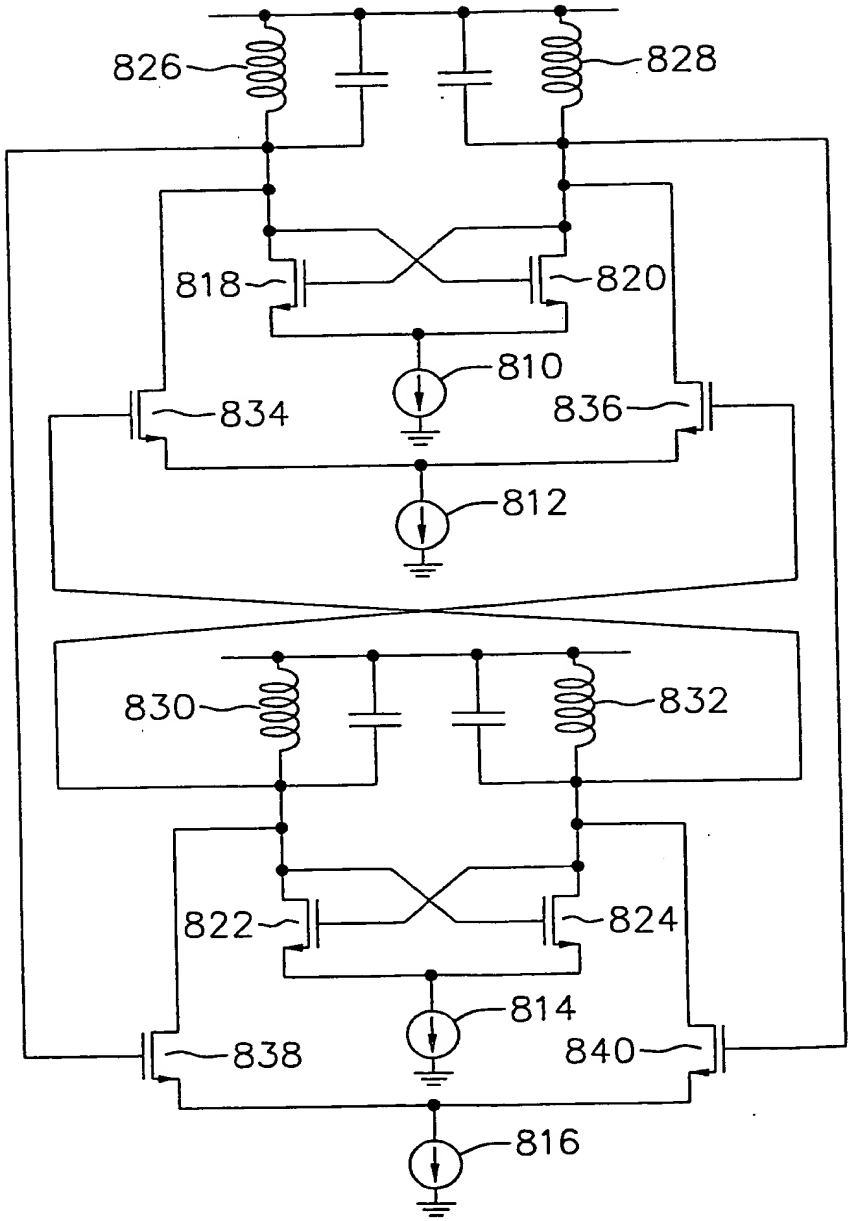

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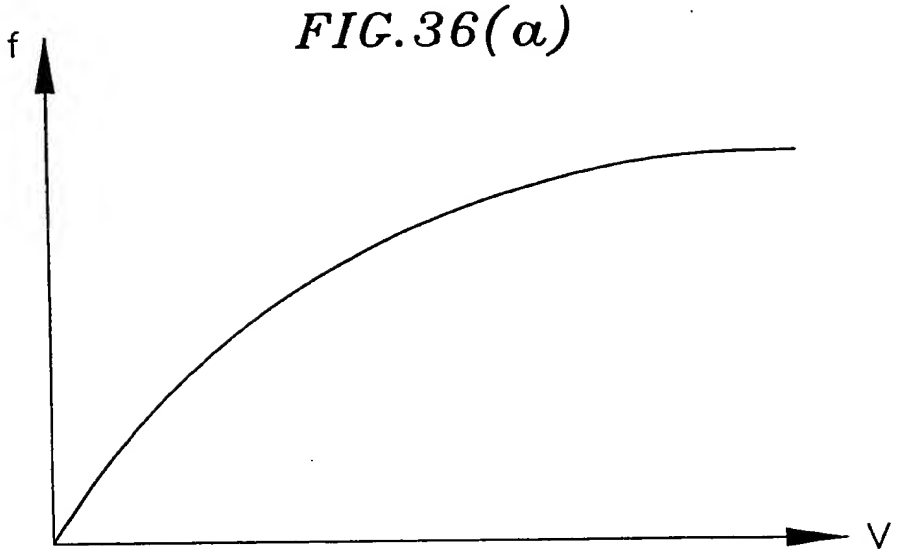
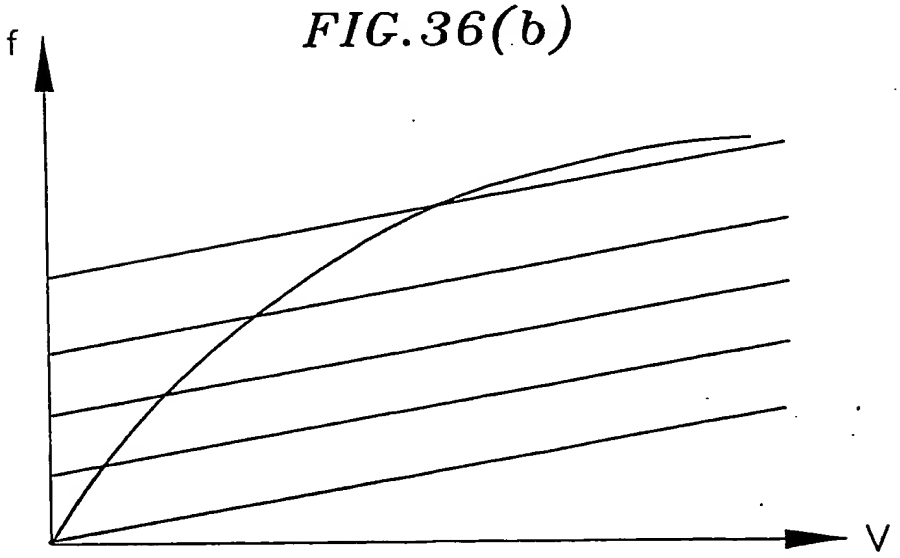
FIG.36(a)



TYPICAL VCO TUNING CURVE

FIG.36(b)



SEGMENTED VCO TUNING CURVE

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FIG.37a

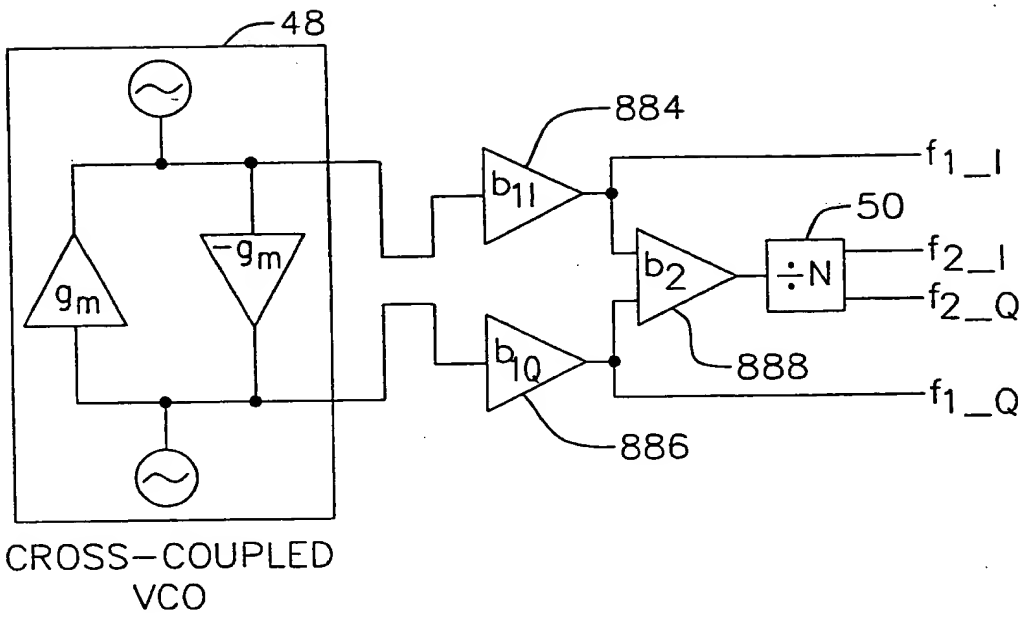

FIG.37b

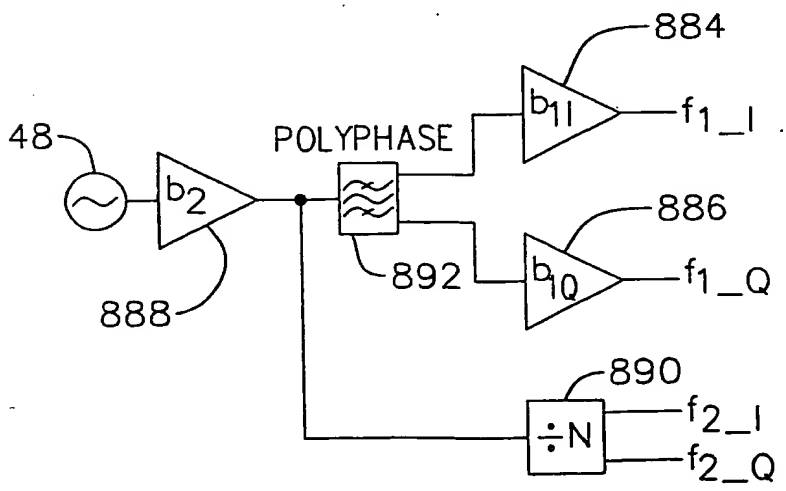

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FIG.38

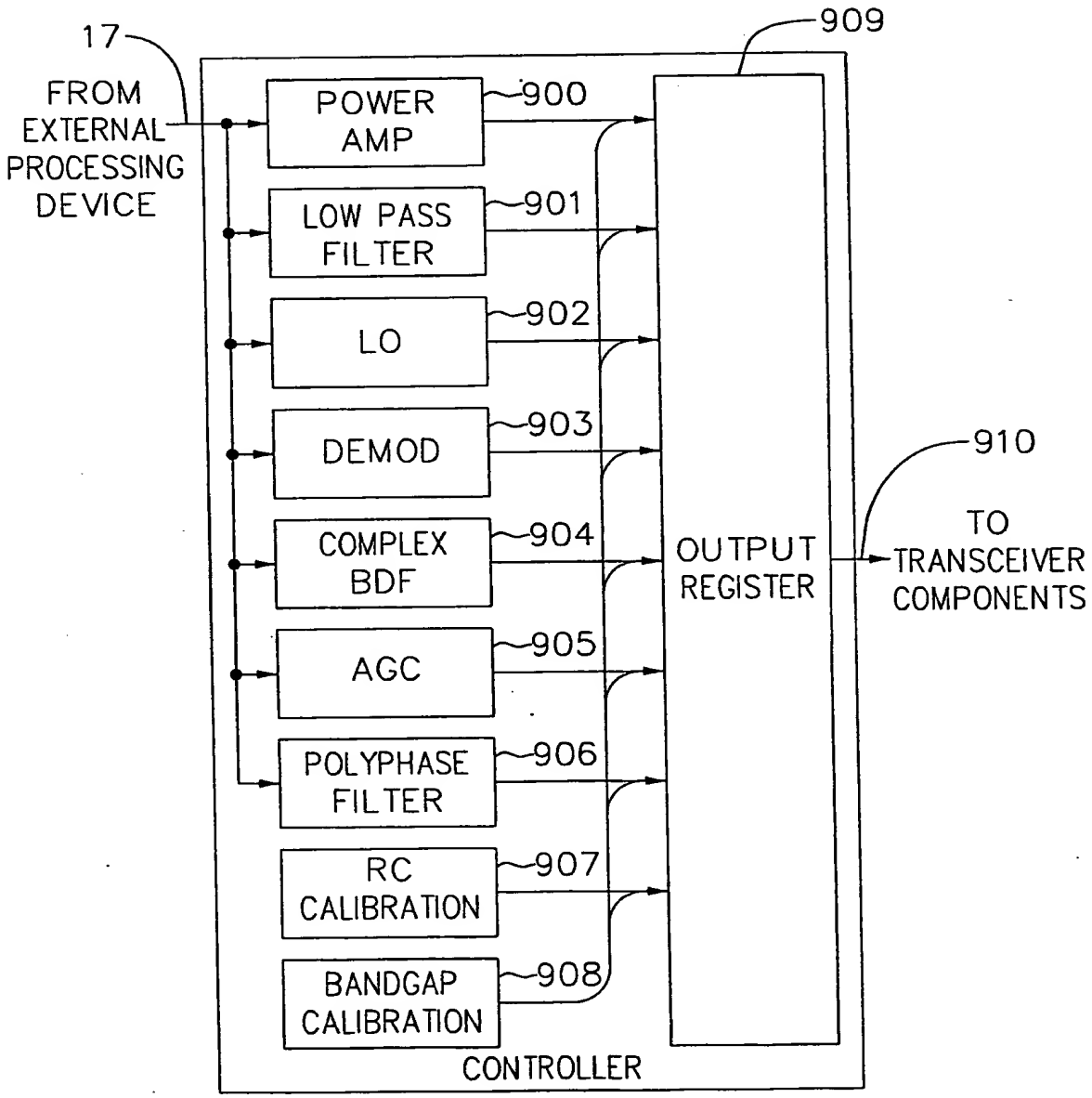

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FIG.39

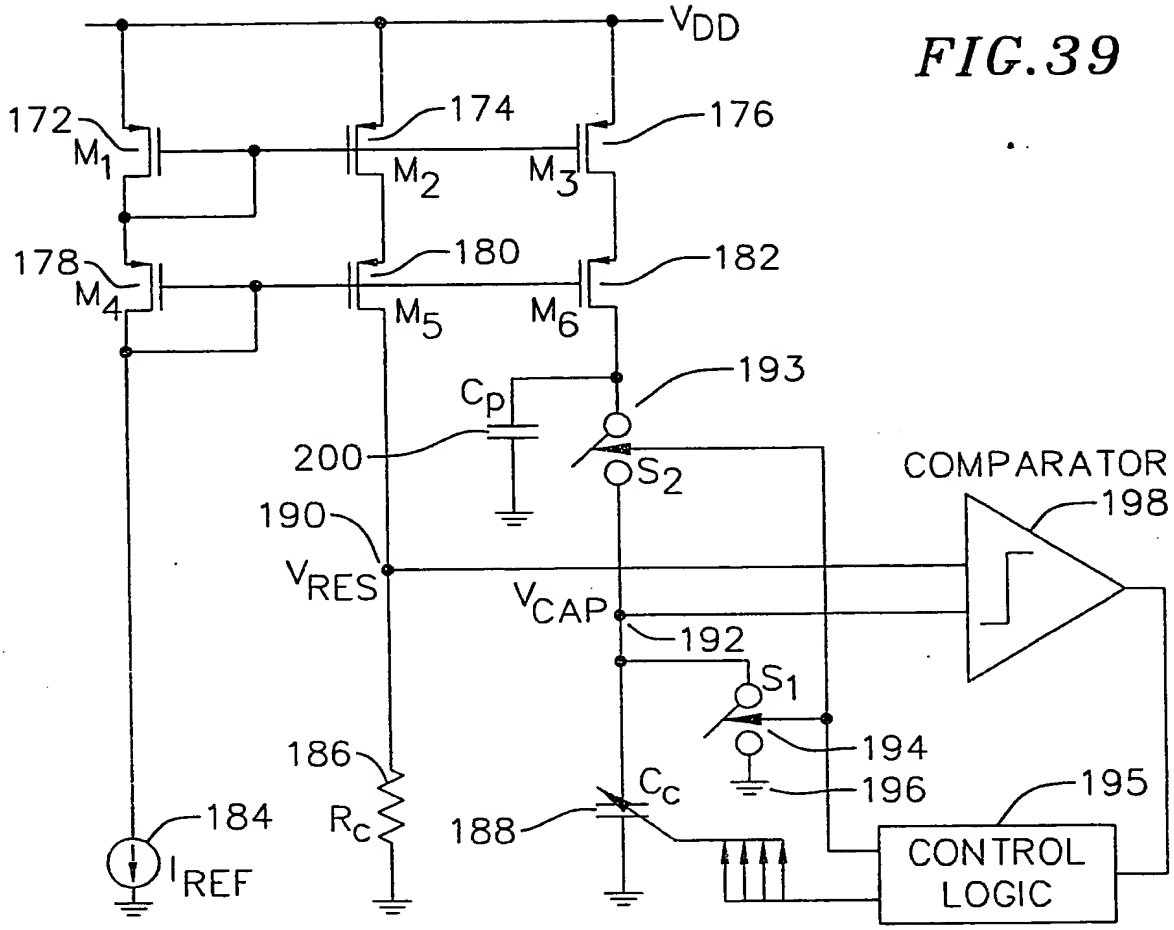

FIG.40

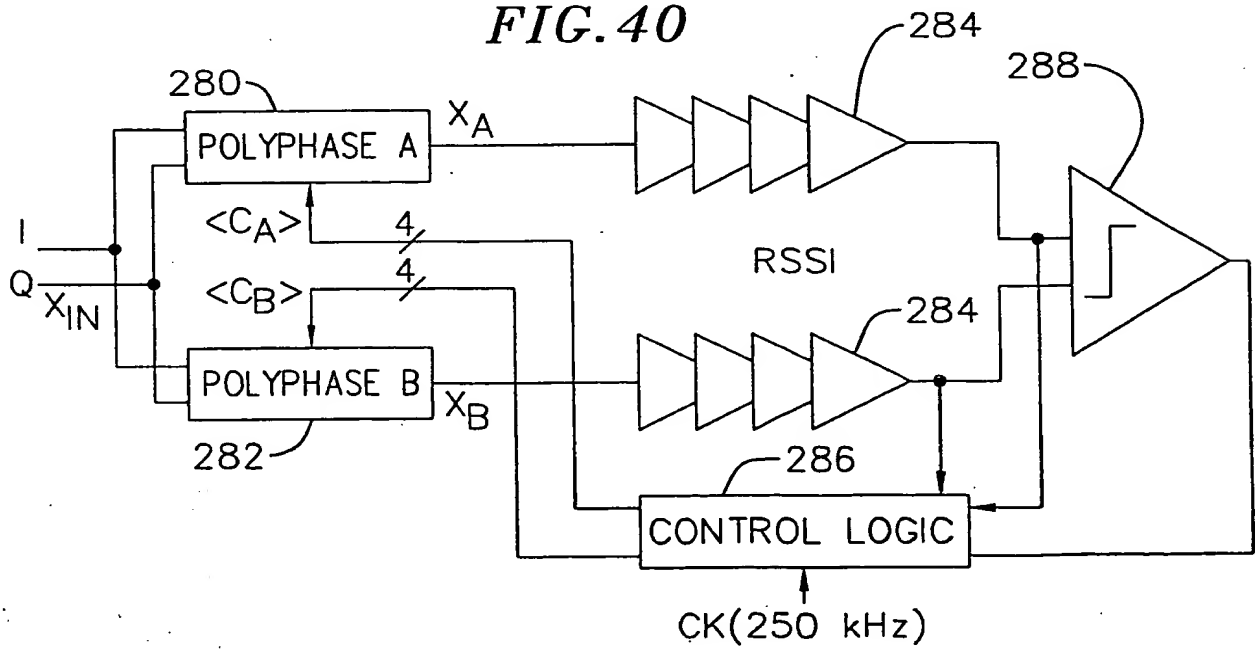

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FIG. 41

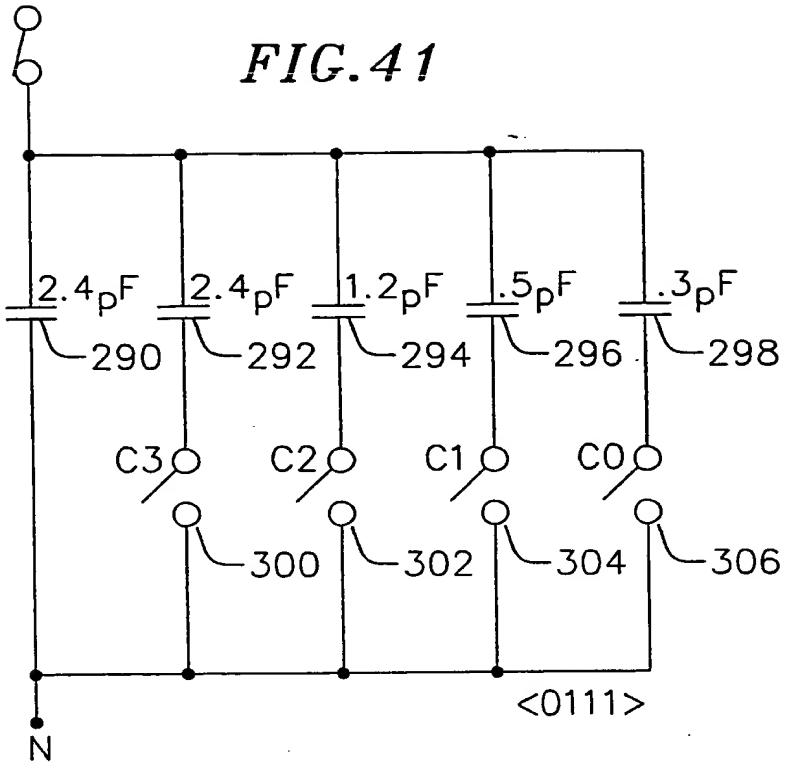

FIG. 42

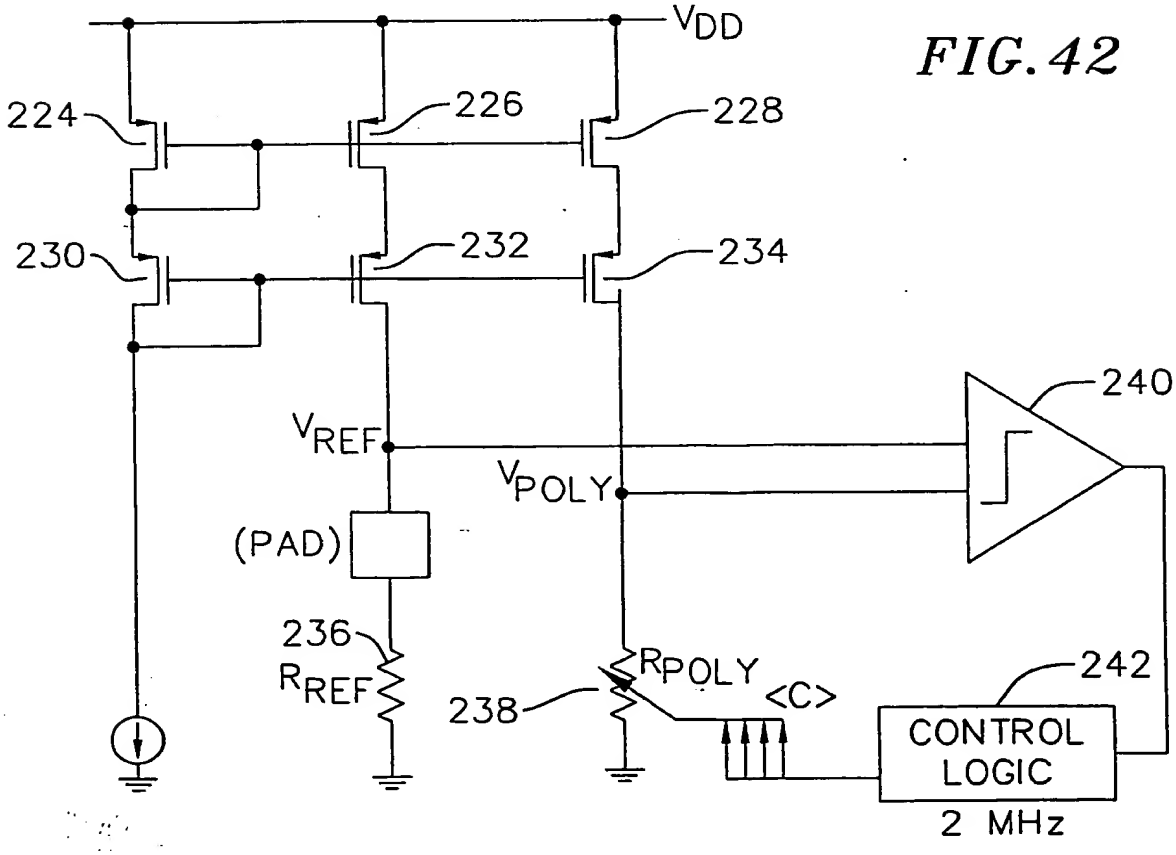

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FIG. 43

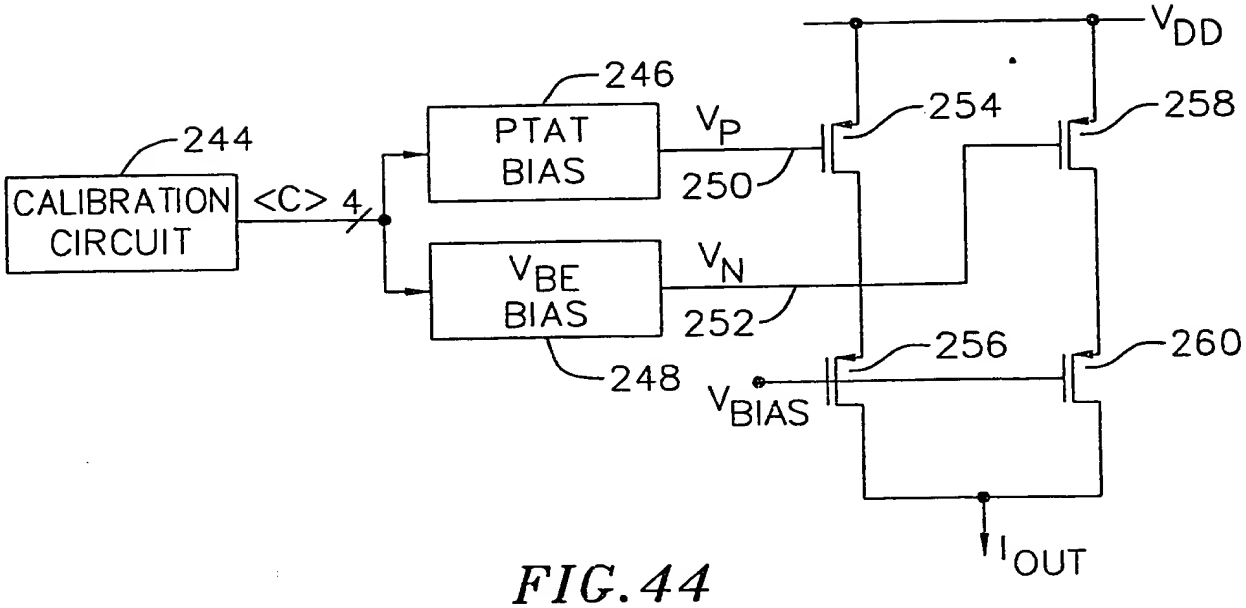

FIG. 44

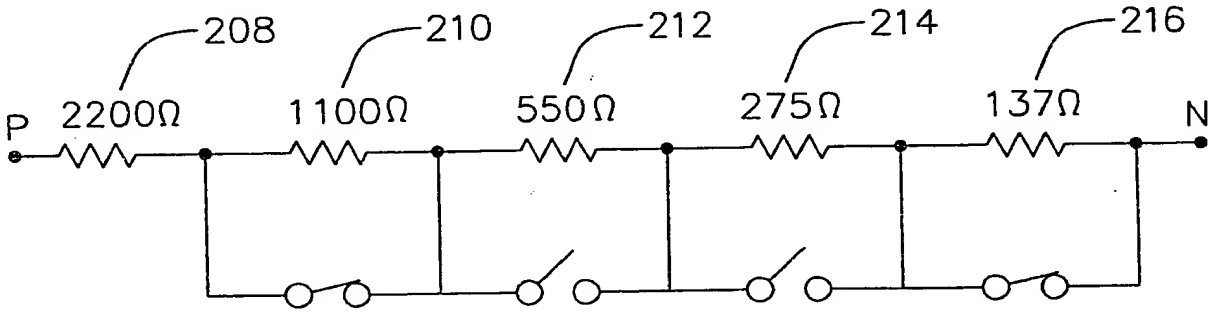

FIG. 45

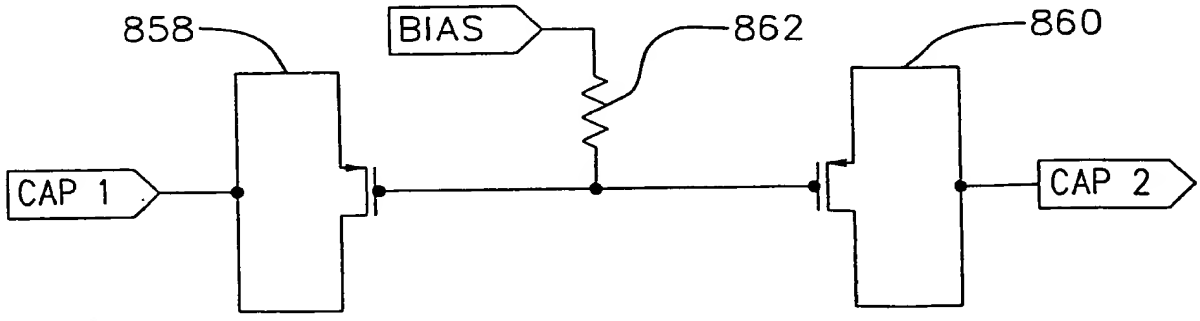

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FIG. 46

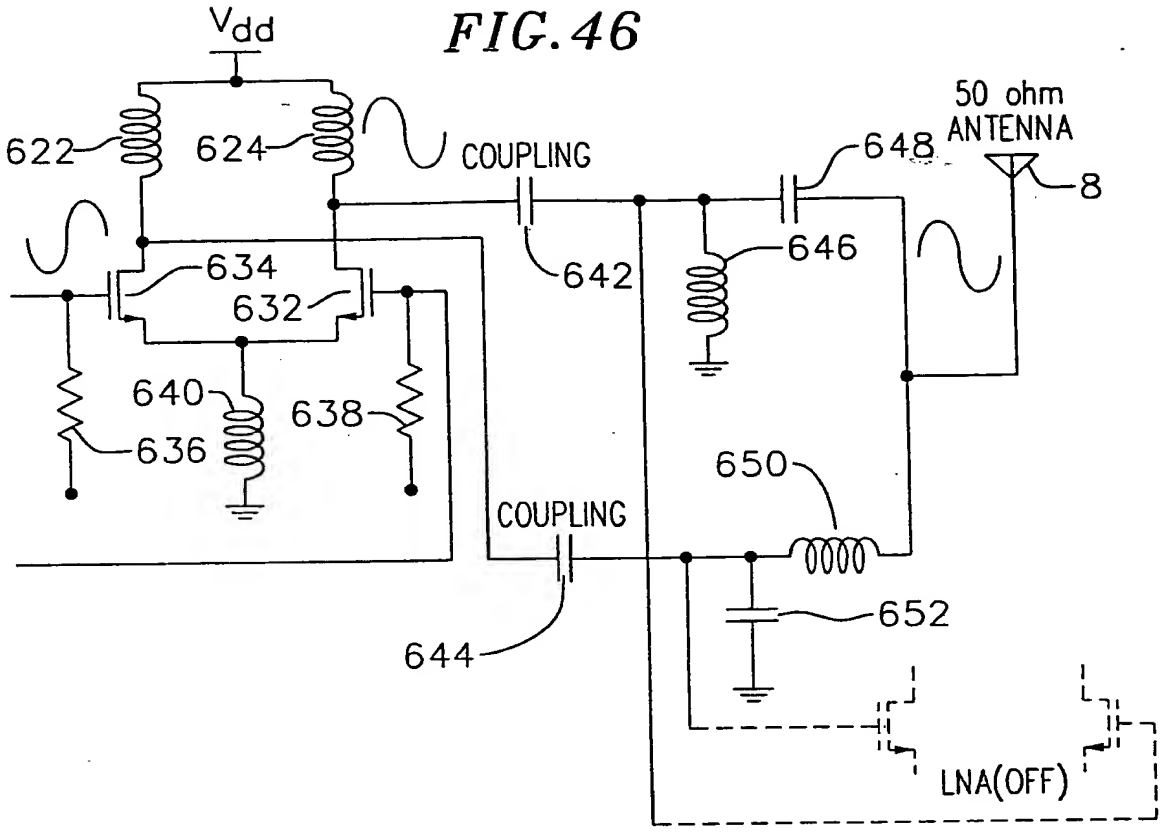
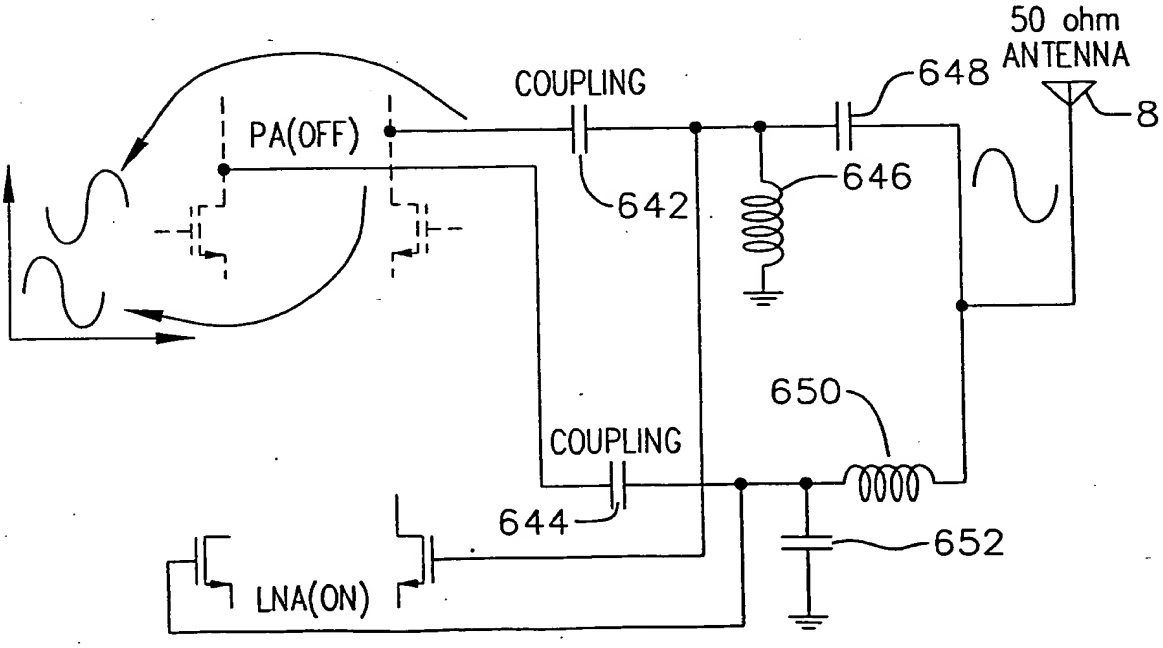


FIG. 47



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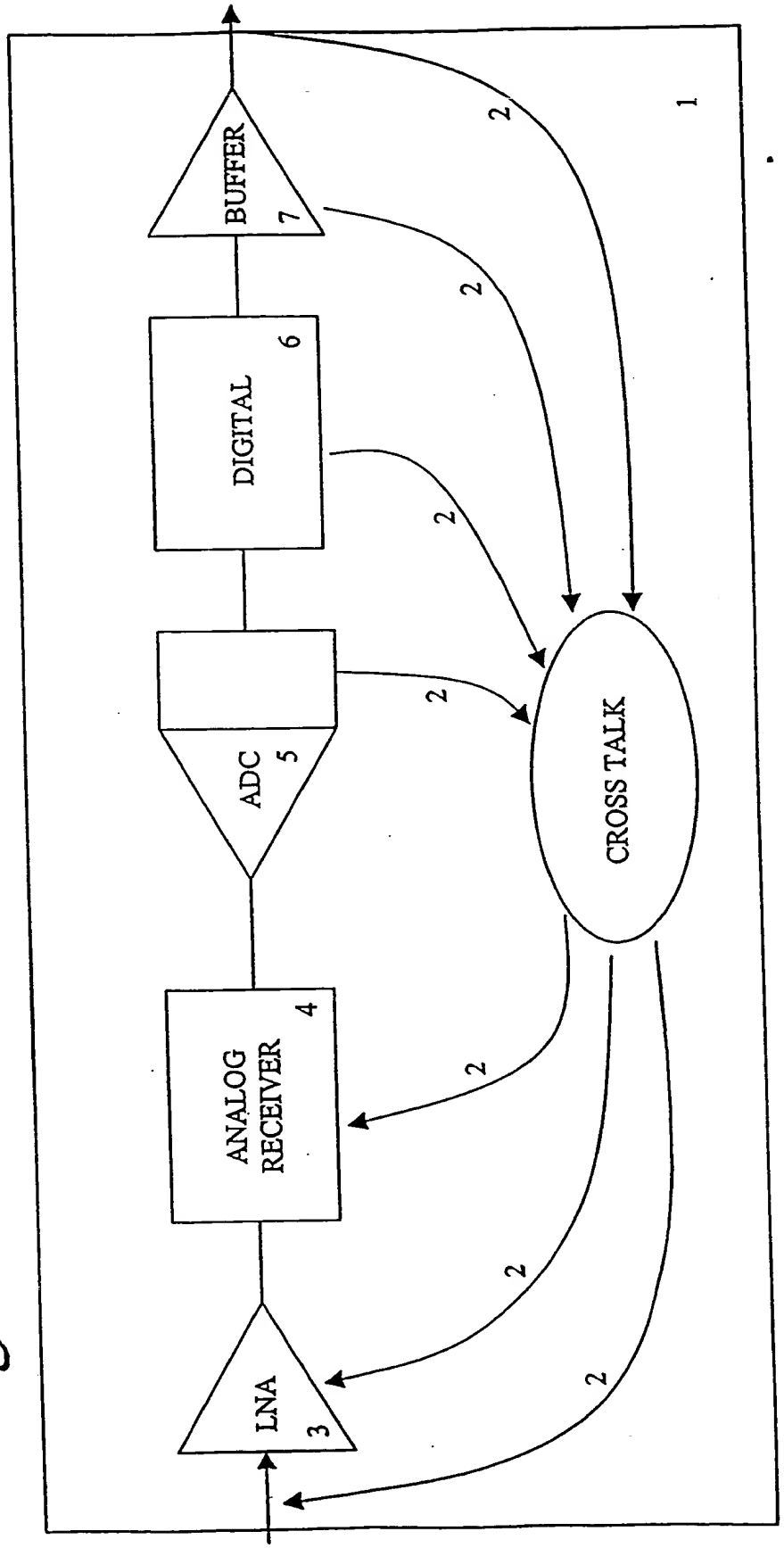

Fig.48a

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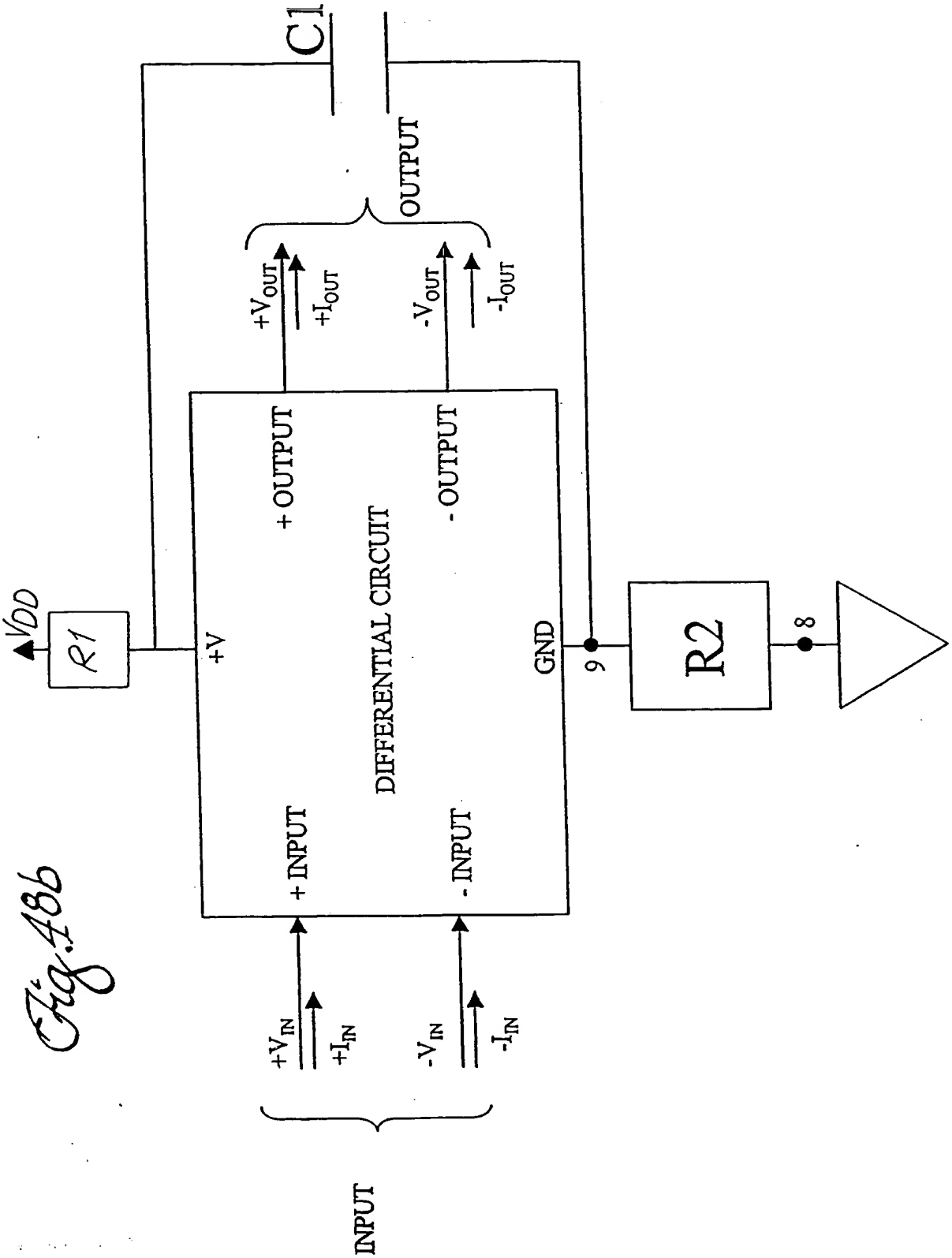

Fig.48b

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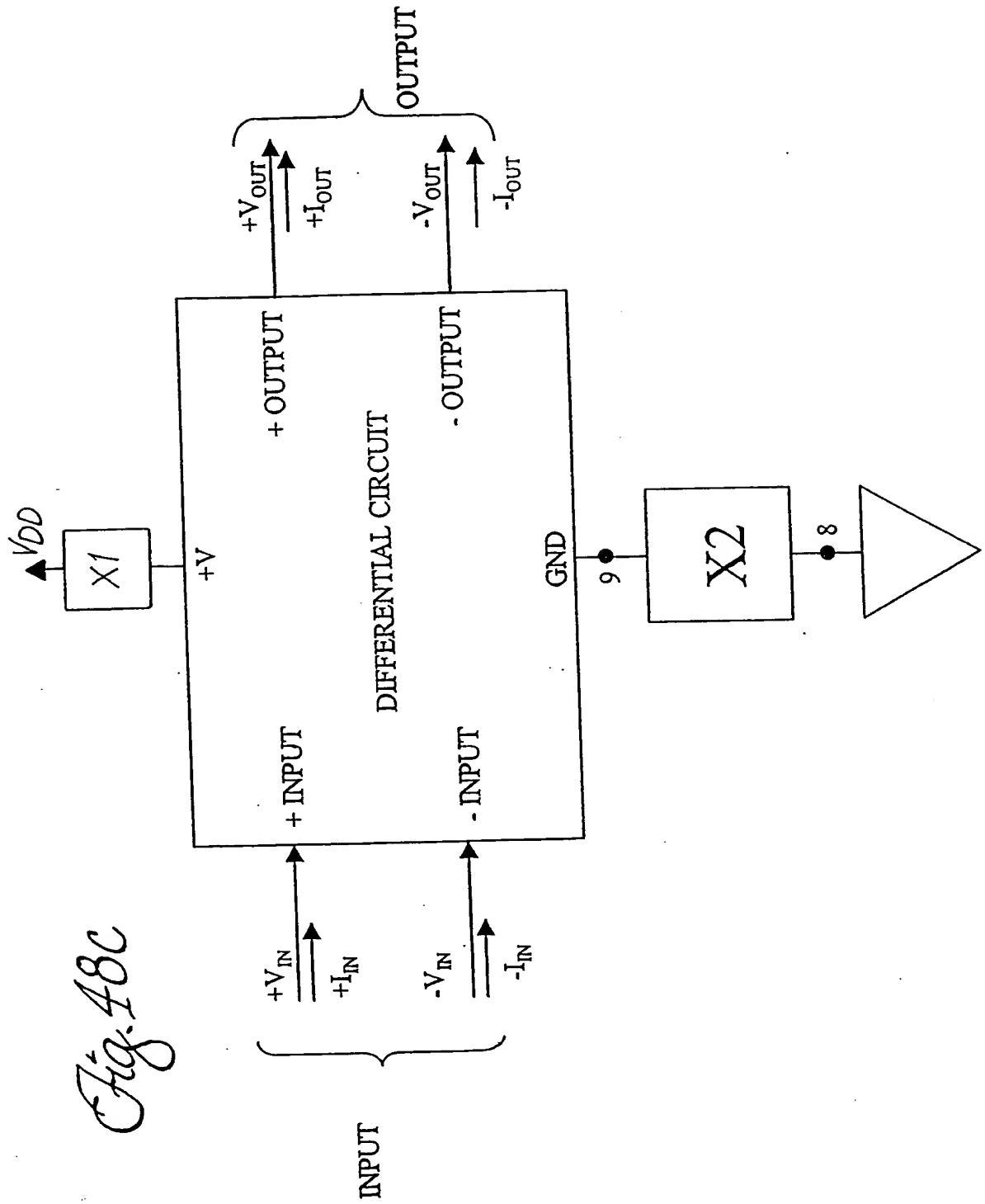

Fig. 48C

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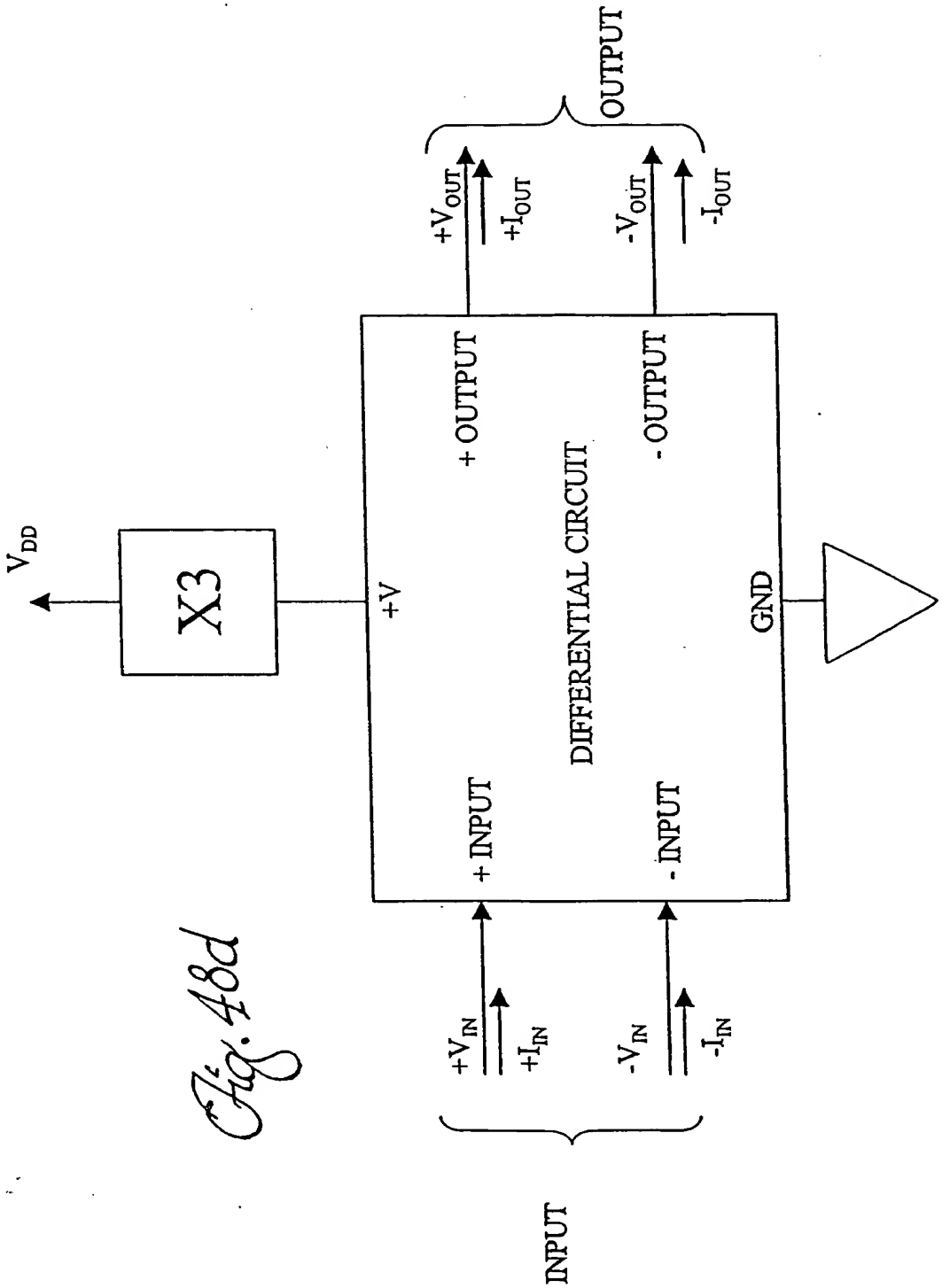

Fig. 48d

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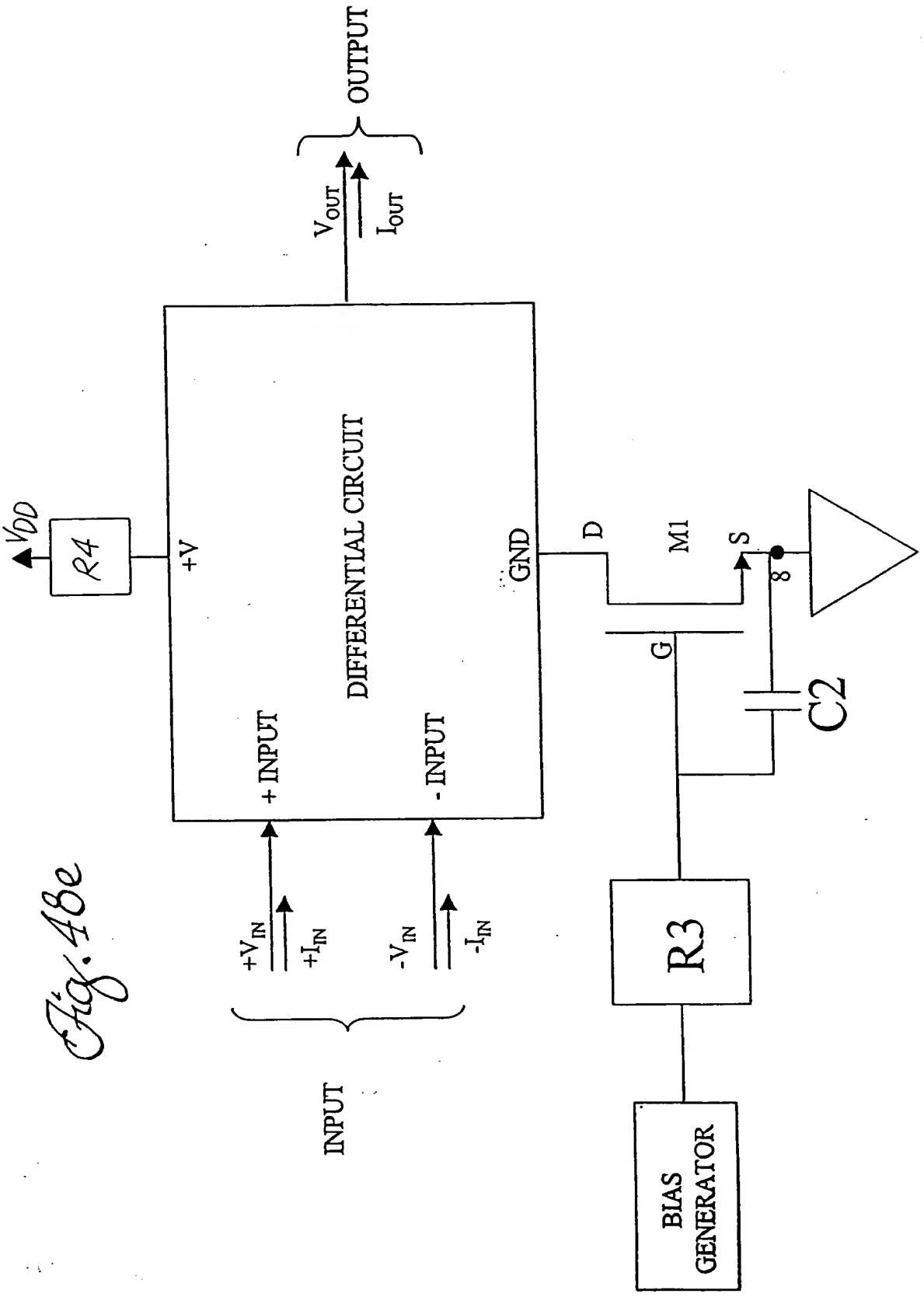

Fig. 18e

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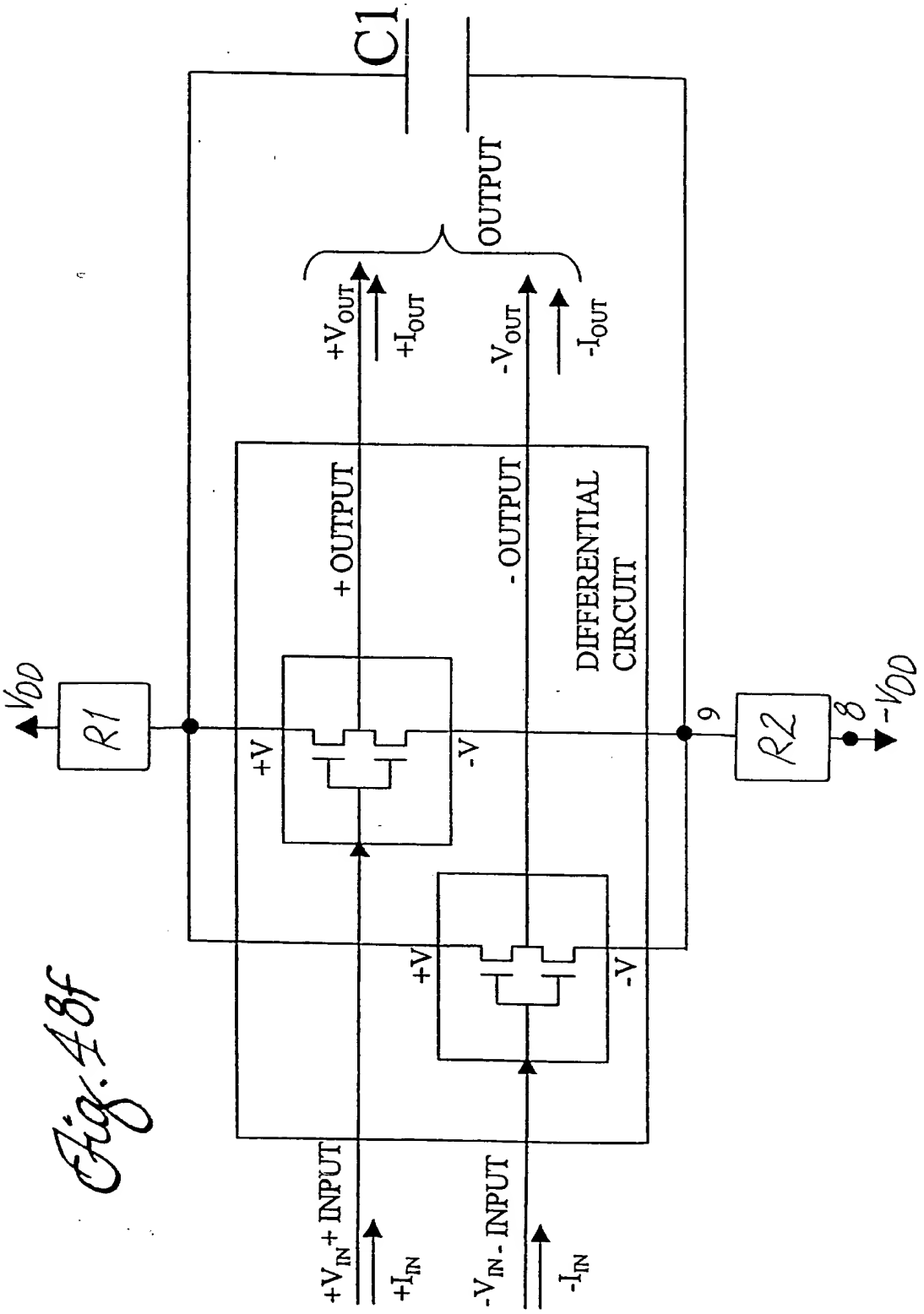

Fig. 48f